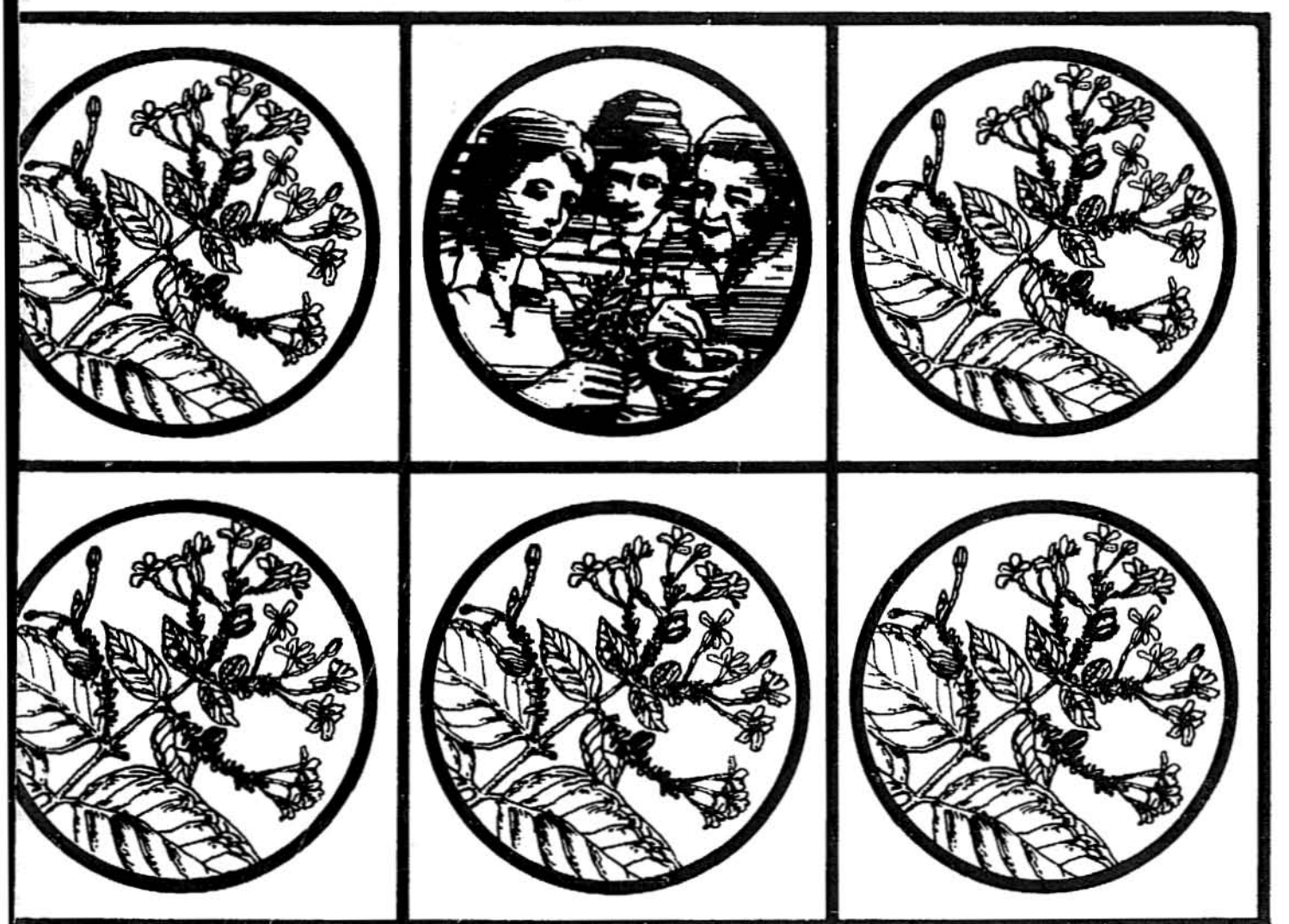
PHILIPPINE MEDICINAL PLANTS IN COMMON USE

REVISED EDITION

MICHAEL L. TAN



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THEIR PHYTOCHEMISTRY & PHARMACOLOGY

REVISED EDITION

MICHAEL L. TAN

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INTRODUCTION

In 1977, a feasibility study on the integration of a medicinal plants component into Community Based Health Programs (CBHP) was conducted for the Mindanao-Sulu Secretariat of Social Action (MISSSA) through a grant from the Asia Foundation.

During the feasibility study, and at the inter-regional conference on CBHP convened that same year, CBHP personnel expressed deep interest not just in medicinal plants but in traditional medicine in general. The tapping of traditional medicine was identified as a vital part of the efforts to develop health programs that would be truly community-based, self-reliant and responsive. However, many CBHP workers also expressed the need for more reading materials on folk medicine.

The production of this handbook is part of an ongoing program to meet this need. Originally, the proposal was to compile information on the botany, phytochemistry and pharmacology of 20 of the more commonly used medicinal plants. Data collected during the feasibility study (on the most widely used plants) was to be supplemented by additional survey forms sent out to different CBHP areas.

As the data started coming in, it became apparent that a "cookbook-style" manual covering just 20 plants would have been inadequate. Worse, it would have encouraged a mechanical application of the 20 plants without encouraging a look into the hundreds of other folk remedies presently in use.

In its present form, the handbook discusses over 200 plants but even this over-extended product has excluded a lot of material which could still be used—listings of local names for plants (more than 40 for one plant, in some cases), botanical descriptions; methods of collection, processing and propagation, more detailed information of the nature and role of plant constituents;and even the cultural basis of folk medicine (an important factor that is often overlooked).

Other manuals on these other aspects may eventually be compiled but it must be emphasized that the manuals are only meant as reference materials.

The present thrust of research into medicinal plants is geared towards the screening of plants for cardiovascular, anti-cancer and anti-fertility drugs. While this type of research has its value, it seems inapproriate in countries where available forms of treatment for such widespread diseases such as tuberculosis, malaria and schistosomiasis continue to be beyond the reach of the majority of the victims. In the Philippines, the situation is even more disturbing, with recent studies revealing that 95% of the materials used to produce"local" drugs are, in fact, imported. The inclusion of what are supposed to be nonfatal diseases such as bronchitis in the ten top causes of death in the country is a reflection of the painful cost of this type of dependence.

Clearly, there is a need to link up research and application. For too long now, research has been impractical and irrelevant while actual practices continue to be haphazard and unsystematic.

Perhaps, the Community Based Health Programs will be able to change this. The starting point and the continuing guide for research must be the communities themselves. We have to work on existing local uses because these are reflective of local needs, and because of the strong empirical (experiential) basis of these practices. As this handbook will show, findings in laboratories often only substantiate, in so much scientific jargon, what has been in practice for centuries.

Hopefully, future manuals will be more and more based on the experiences of different communities. The meeting of open but analytical minds will mean much more now than the degree of formal education one has gone through. Unless this is done, the use of medicinal plants and folk medicine will remain what it is today – a curious remnant of the past, valuable for its antiquity but totally inadequate in meeting the pressing needs of the times.

Science cannot be for the people unless it is developed with the people.

Michael L. Tan
1 May 1978

PREFACE TO THE SECOND EDITION

The last two years has seen the growth of interest in traditional medicine here in the Philippines and in other countries. Continuing research has produced significant discoveries about many medicinal plants. This revised edition has therefore been prepared to disseminate the new findings.

Several new plants have been introduced although the additional plants remain limited to those belonging to the plant families covered in the first edition.

A number of new preparations and doses have been added, mainly based on listings in the *Philippine National Formulary* and the *Chinese Pharmacopoeia.* A more significant development is the incorporation of preparations that are being used in our community-based health programs. The spreading popularity of medicinal plants has spurred local programs to compile their own herbals and to work out mixtures based on traditional knowledge and published studies. This has been an encouraging sign, showing that traditional medicine can be developed through an approach that is both scientific and community-based.

The language used in this edition remains technical because the handbook is aimed for intermediate users – students and professionals with some training in the sciences, who intend to do applied research on medicinal plants and to help in the development of local materials to be used by communities.

Simplified versions of the first edition were prepared in some areas, limiting themselves to preparation and uses. This approach could be followed by other communities although it is also possible, and advantageous, to introduce simple phyto-chemical and pharmacological information, especially in relation to traditional concepts of drug action.

There have been "growing up pains" accompanying the development of traditional medical systems here and in other countries. Wholesale rejection by some professionals continues while on the other extreme, there has been the equally dangerous attitude of sensationalizing traditional medicine into a fad.

Clearly, traditional medicine cannot develop without a rational integration of theory and practice. Publications such as this manual cannot be used or applied without giving consideration to the needs and resources of our communities. More importantly, it cannot be used without an understanding of the different economic, social and cultural factors that affect the development of traditional medicine.

M. L. Tan
21 June 1980

ABOUT DOSES

People are always interested in doses of medicinal plants and this is a healthy indicator of the efforts to make traditional medicine more scientific.

However, this concern can be dragged to an extreme, to the point that people may become unduly fixated on doses. We forget that many medicinal plants are in fact edible fruits and vegetables with very low toxicity. No doubt, there are plants such as talumpunay *(Datura metel)* which need to be used with caution. But there are far fewer poisonous plants than people think there are. In fact, the problem we need to cope with medicinal plants is their very mild and slow action. This is especially the case with decoctions, infusions and other crude preparations which we are using right now. In these preparations, the concentration of active principle(s) is usually very low.

Nevertheless, doses have been included in this manual, many of which were taken from the *Chinese Pharmacopoeia.* Readers may notice that this edition includes changes in some of the doses – this is because in the first edition, doses were obtained from different herbals. The publication of an official *Chinese Pharmacopoeia* provides a centralized source of listings and doses that would be more reliable.

Notice that the doses are wide in range (e.g. 9-30 gm.), which again illustrates the wide margin of safety that can be expected from crude preparations. Variations in doses were also found in different official publications or studies, even if they come from the same country. Since this manual is intended as a reference source, all doses as listed in available official publications (formularies, pharmacopoeia) have been included.

The figures should not be taken dogmatically, especially since many of these doses are from foreign sources. The value in these figures is that they can be a guide for further research and use.

Many readers of the first edition commented on the use of "grams," pointing out that scales are not available in rural areas (even if they can be improvised). This is a valid point and there were plans to convert all the doses into numbers of leaves or fruits. Unfortunately, there is too much variation in the sizes and weights of different plant parts so such a conversion may not be that practical. Bark material, for instance, cannot be quantified in terms of numbers of pieces unless specific dimensions are given. It was therefore decided to retain the use of "grams" as an acceptable standard.

Conversions can be made for local herbals. To help in conceptualizing the weights, the following guide has been prepared. Leaves of different sizes representing the more commonly known medicinal plants were weighed, with samplings composed of 30-50 leaves for each species. The weights given below are averages.

PLANT NAME	AVERAGE WEIGHT OF ONE FRESH LEAF, GRAM
Damong maria *(Artemisia vulgaris)*	.25
Tsitsirika *(Catharanthus roseus)*	.40
Lagundi *(Vitex negundo)*	.40
Takip kohol *(Centella asiatica)*	.50
Dita *(Alstonia scholaris)*	1.00
Oregano *(Coleus amboinicus)*	1.00
Alagaw *(Premna odorata)* – young leaves	1.50
old leaves	2.00
Sambong *(Bluemea balsamifera)*	2.00
Banaba *(Lagerstroemia speciosa)*	2.50 – 3.00
Dapdap *(Erythrina variegata)*	4.00

ABOUT THE USES

Readers should keep in mind that conceptual differences exist between cosmopolitan ("western") and traditional medical systems. Some of the most important differences lie in the concept of drug action.

In cosmopolitan medicine, drugs are looked on mainly as "cures." An anti-malarial drug, for instance, "cures"malaria by killing the protozoa that causes the disease.

In traditional systems, disease is usually conceptualized as a disruption (dys-krasia) of the balance of forces, both external and internal to the human organism. Excessive heat, cold or wind, as well as harmful living forces (whether germs or evil spirits) are cited as causes of the disruption.

Correspondingly, drugs are seen as external agents to be used mainly as aids to restore a healthful balance. In "modern" terms, this restorative action is sometimes interpreted as a strengtening of the body's own defense or immunological mechanisms so the body itself can overcome disease.

In this handbook, several uses of medicinal plants are taken from Chinese publications, where traditional concepts have been integrated with "western" phytochemistry and pharmacology. Thus, some of the indications for the plants may seem incredible, e.g. plants for appendicitis. Yet, the Chinese method for treating appendicitis is mainly non-surgical. They use purgatives to "cleanse out" toxins, together with plants having "anti-inflammatory" properties. This method is unacceptable in western medicine although the Chinese do have extensive clinical documentation to back up their claims to the efficiency of such methods.

Readers should therefore be aware that a plant indicated for hepatitis will not necessarily "cure" hepatitis in the "western" sense. The plant may work by improving hepatic function or by working to improve other systems of the body.

In the last few years, Soviet researchers have used the term "adaptogen" for plant drugs which help the body to fight stress and certain ailments. The most well known example of such n "adaptogen" would be ginseng, which has been reported to have a number of seemingly unrelated actions on different body systems. Unfortunately, such research is still looked on as "strange" in the West and for countries like the Philippines, with its research patterned after the United States, there is a tendency to share the biases.

On the community level, much more still needs to be done by way of understanding local concenpts of health, disease and the use of drugs. Some attempts have been made to relate local concepts with and "western" concepts, e.g. "warm" plants used for rheumatism (a "cold" disease) are explained as plants with certain chemicals which have a soothing effect on the skin and muscles (counter-irritant action). But this is all very basic and still needs to be expanded further.* We need to be open to both the strengths and weaknesses of traditional and cosmopolitan systems and to learn to maximize the use of all these systems for the benefit of the majority.

*Documentation on this integrated approach is being prepared. Essentially, the approach builds from the community's own knowledge and resources, through dialogical (two-way) sessions involving both theory and practice (e.g. demonstrations of preparations, collection of actual plant specimens).

MONOCOTYLEDONAE

Family ARACEAE

These are perennial herbs with fleshy rhizomes or corms and acrid or pungent juice. Gabi [*Colocasia esculenta* (L.) Schott & Endl.] is a well known member of this family. Although it is not used in folk medicine in the Philippines, gabi is mentioned here for its nutritional value. The leaves are particularly rich in vitamins A and C, folic acid, calcium, phosphorus and iron. Moreover, the green variety (gabi verde) contains appreciable amounts of iodine (2.26 ppm dry, where the required daily iodine for adults is about .90 ppm).

One very useful member of this family is lubigan or sweet-flag:

Fig. 1 – Lubigan [*Acorus calamus* L.] thrives well in wet soil.

LUBIGAN (Fig. 1) *Acorus calamus* L.
Acoro (*Sp.*); dalau (*Ilk.*)

The rhizomes of lubigan are aromatic. They contain calamus oil (1-2% of the rhizome), which is composed of fatty acids (mainly palmitic and n-hemptylic) and various volatile substances such as pinene, camphene, asaraldehyde, eugenol, asarone, calemene, calamerol, calameone.

Lubigan's medicinal qualities have been attributed mainly to alpha and beta asarones. The Indians and the Chinese report that asarone has reserpine-like action – it lowers blood pressure and has tranquillizing effects. The asarones are smooth muscle relaxants as well as central nervous system depressants. Anticonvulsant and hypothermic effects have been reported, as well as antifungal and antibacterial properties.

The powdered root is insecticidal and is used in Mindoro against rice pests.

SUGGESTED PREPARATIONS AND USES

Decoction of Lubigan Rhizome – The rootlets are removed and the rhizomes are rinsed, cut into sections and dried. It can be stored under moist sand. To prepare the decoction, 6-9 gm of the dried or 9-12 gm of the fresh rhizomes are used. The decoction can be taken as an analgesic in rheumatism, muscle pains and in diarrhea and stomach ache. The decoction can also be tried for convulsions.

External Uses – The dried rhizome can be powdered and mixed with oil for external application on painful areas of the body (rheumatism, arthritis, lumbago). It can also be used for fungal skin diseases and for scabies.

Family BROMELIACEAE

PINYA *Ananas comosus* (L.) Merr.

Pinya or pineapple is a fair source of calcium, vitamins A, B and C. The juice contains citric and malic acids which make it a refrigerant. The presence of 5-hydroxytryptamine (5-HT or serotonin) in the fruit and the juice has been reported. The juice is also the source of the enzyme bromelin, which is anthelmintic and anti-inflammatory. Bromelin is discussed in greater detail with papain (Cf.*Carica papaya* L., page 24). Unripe pineapples are said tc be poisonous and the juice from unripe fruits is reported to be an abortifacient.

Family CYPERACEAE

2

Fig. 2 – Mutha [*Cyperus rotundus* L.]

Members of this family are also called sedges. The sedges closely resemble the grasses but there are some differences, the main one being the stems – the stems of grasses are entire while those of sedges are three-angled. Over a hundred species of sedges exist in the Philippines, most of them growing wild. Several of them are used medicinally.

MUTHA (Fig. 2) *Cyperus rotundus* L.

Barsanga, balisanga (*Ilk.*); boto-botones, tarugug (*Bik.*)

Mutha has volatile oils in the rhizomes (about 0.5%). The oil is composed of cyperene, cyperol, cyperone , pinene and sesquiterpenes. Locally, the rhizomes have been reported to be used as a diuretic, uterine tonic, vermifuge and anti-dysenteric.

An interesting study made by a Filipino almost 40 years ago reported on the isolation of a substance from mutha capable of dissolving several times its weight of lecithin and amino acid substances associated with the formation of calculi (stones) in the urinary tract.There have been no reports of follow-up on that study.

The Chinese report that extracts of mutha's rhizomes, given to experimental animals, inhibited uterine contractions and increased tolerance to pain. The plant's essential oil (found in the rhizomes) has shown *in vitro* antibacterial (against gram positive organisms) and antiviral activity. An extract of the roots inhibited 14 different kinds of fungi *in vitro*. Other studies showed the plant extracts to be diuretic, antiemetic, anti-inflammatory, antihistaminic. Prolonged hypotensive and vasodilating effects have also been reported in experimental animals.

SUGGESTED PREPARATIONS AND USES

Decoction of Mutha Rhizome – Collect the rhizome, remove the fibrous rootlets and dry. Use 3-9 gm of the dried material to prepare a decoction. The decoction can be used for dysmenorrhea, irregular menstruation, stomach ache (neurogenic gastralgia) and vomiting due to ulcers.

External Uses – Use the rhizomes to prepare a decoction that can be used as a wash for skin diseases. For sprains and bruises, use the pounded fresh material as a poultice. Or, powderize the drug material and warm it with vinegar. Then apply on the affected areas.

CONTRAINDICATIONS: Do not use in patients with fever. It is also contraindicated in patients whose menstruation has just started.

NOTE: Anuang [*Cyperus kyllingia* Endl. or *Kyllinga monocephala* Rottb] has similar uses with mutha in folk medicine and, in fact, has many names in other dialects that are the same for mutha. Anuang's roots also contain volatile oil although its pharmacology has not been studied as much as mutha.

Fig. 3 – Pugo-pugo [*Cyperus brevifolius* (Rottb.) Hask.]

PUGO-PUGO (Fig. 3) — *Cyperus brevifolius* (Rottb.) Hask.
Bibi-inok (Bon.) — Syn. *Kyllinga brevifolia* Rottb.

Pugo-pugo (Cebuano name) is not too widely known in the Philippines. However, it is widely used in China, where clinical studies have shown it to be quite effective for malaria. The plant is also used for coughing and, externally, for skin diseases. Strangely, there are no available reports on its chemical constituents.

SUGGESTED PREPARATIONS AND USES

Decoction of Pugo-pugo – The whole plant is used, 12-18 gm. fresh and 30-60 gm. dried. For the treatment of malaria, the plant material must be kept heated for 3-4 hours before the

decoction can be used. The dose is given in three divided doses daily. This is repeated for at least three days.

As a cough remedy, the decoction can be processed into a syrup. It is said to be effective for whooping cough.

Externally, the decoction is used as a wash for skin diseases.

CONTRAINDICATIONS: The plant should not be used in pregnant women.

Family DIOSCOREACEAE

The tubers of several plants from this family are eaten: nami[1], tugi[2], ubi-ubihan[3] and ubi[4]. The tubers of these plants are poisonous if eaten raw because of the presence of sapogenins, mainly dioscoreine, which are central nervous system depressants. Because of this, the tubers have to be carefully washed and cooked before they are eaten.

The sapogenins have been of interest to pharmacologists and other researchers because of the close similarity of these sapogenins' structure to certain steroids such as cortisone, widely used as an anti-rheumatic drug, and progesterone, a synthetic hormone used in contraceptives.

Using certain procedures in the laboratory, these sapogenins can be converted into the medicinally valuable steroids.

Locally, the plants are not known to be popularly used as medicine.

[1] *Dioscorea hispida* Dennst.

[2] *D. esculenta* (Lour.) Burk.

[3] *D. bulbifera* L.

[4] *D. alata* L.

Family GRAMINAE

The grass family is a large one, covering many species that grow wild but also including some familiar cultivated crops such as sugar cane, rice and corn. Many of the grasses are used medicinally although their action is almost always one of diuresis. The diuretic action is due mainly to the high potassium content. In addition, the different types of bamboos contain minerals such as silica, potash, lime and alumina, which also have a diuretic effect although the action is more irritating. Those who have tried drinking water from bamboos would be familiar with this irritating, even painful effect.

KOGON — *Imperata cylindrica* (L) Beauv.

The rhizomes of kogon are medicinal, used particularly for their diuretic effect. The rhizomes are about 20% sugars, primarily glucose and sucrose. Potassium, various acids (mainly citric and malic) and a triterpene have been identified.

The caryopsis (hairy portion) has been shown to shorten blood clotting time and bleeding. The action is partly mechanical (absorption) but there may be other chemical constituents responsible for shortening the blood clotting time.

SUGGESTED PREPARATIONS AND USES

The rhizomes can be used fresh or dried. If they are to be used dried, the rhizomes should be cleaned and sliced, then fried over a strong fire until it turns black, after which clean water is sprinkled over the fried rhizome. The rhizomes are then again put out to dry.

Decoction of Fresh Kogon Rhizomes – Use 30-60 gm fresh rhizomes and boil. The decoction can be given for acute glomerulo-nephritis. For heat stroke, use 125-250 gm of the fresh rhizomes boiled for 10 minutes in 1 liter of water. Take in two divided doses.

Decoction of Dried Kogon Rhizomes – This preparation is used for epistaxis, hemoptysis and hematuria. Use 9-30 gm of dried rhizome.

Decoction of Dried Kogon Rhizomes and Dried Rosal Fruits – Rosal is discussed on page 62. The combination of kogon and rosal works better for the bleeding conditions mentioned above than when kogon is used alone. Use 10 gm. each of dried kogon rhizomes and dried rosal fruits and boil in a liter of water. Take in two divided doses daily.

MAIS *Zea mays* L.

"Buhok ng mais" (the silky stigma or "hair") is one of the most commonly used diuretics in traditional medicine, both in the East and in the West. Chemical analysis of the hair showed it had vitamins (unspecified), sugars, sterols (coixol, phytosterol or inositol, and meso-inositol) and various salts, mainly potassium. An analysis of a decoction made from the hair identified malic, citric, tartaric and oxalic acids, as well as two other acids. The diuretic effect is due mainly to potassium although the different acids may also have a role to play in the formation and excretion of urine.

Corn is a staple food, particularly in the Visayas, and it provides more vitamin A, calcium, phosphorus, potassium, proteins and fats than rice.

Another useful product from corn is its oil. Corn oil is a good solvent for drugs to be injected. Corn oil is also noted for its unsaturated acid glycerides and its use is advised for patients with high blood cholesterol.

SUGGESTED PREPARATIONS AND USES

Decoction of Corn Hair – Any quantity of corn hair can be used, depending on the degree of diuresis needed, although 15-30 gm (about one handful) in one liter of water is the usual daily dose. The decoction can be taken in chronic nephritis, urinary tract infections, calculi in the urinary tract, high blood pressure and diabetes, with proper dietary restrictions.

Decoction of Corn Cob – The corn cob also contains potassium and can be used as a diuretic, although its effect is weaker than corn hair. Use 100-150 gm (about 4-5 cobs) in 1 liter of water.

PALAY *Oryza sativa* L.

The close association of rice with most Oriental cultures includes its use for various ailments. Like corn, it also has diuretic action but it is used more for digestive troubles.

As a staple food, rice provides many, but not all, of the nutritional requirements. Unpolished rice contains more fats, proteins, minerals and vitamin B_1 than polished rice. Beri-beri, a disease common among children and caused by a deficiency of vitamin B_1, could easily be prevented by encouraging the use of unpolished rice.

Other than vitamin B_1, rice does not contain particularly special substances* and yet, rice has its medicinal uses, many of which are overlooked because they are so simple and basic.

SUGGESTED PREPARATIONS AND USES

Lugao and/or Am – Lugao (rice porridge) and am (water from the porridge) provide some of the nutrients needed for patients recovering from illness but who are unable to take solid food. Lugao and am are easily digested and provide bulk in the intestine to absorb excess water. A mild demulcent effect is also present, particularly when the malagkit (sticky) variety is used.

*An Indian study reported the presence of an alkaloid oridine, supposedly with antineuritic properties but there has been no follow-up of the study and its claims.

Tutong – Burnt rice provides carbon used as an adsorbent for diarrhea. Give as much as the patient can take. Juice from fruits rich in pectin can be added.

Kanin – Cooked rice provides a good base for poultices because of the starch. It is better to use unhusked rice to prepare the "paste". The "paste" can be used alone, with very good results, for eczema, "bungang araw" (prickly heat or miliariasis) and mild inflammation where a demulcent can help lessen the irritation.

Darak (Rice bran or rice polishings) – Tiki-tiki, the commercial preparation used for prevention and treatment of beri-beri, is extracted from darak. The active ingredient is thiamine or vitamin B_1. Collected under hygienic conditions and mixed with ipa (rice hulls), darak can be used to produce kalamay, palitaw, bibingka, puto, espasol and other similar products which would provide much of the thiamine requirements for children. Darak also provides some iron.

Because of its high crude fiber content, darak can also be used as a laxative. The *Philippine National Formulary* suggests boiling two tablespoons of darak in one glass of water as a laxative.

TANGLAD — *Andropogon citratus* DC
Syn. Cymbopogon citratus Stapf.

Tanglad contains 0.5 to 1% volatile oil, mainly in the roots. The volatile oil consists mainly of citral and small quantities of methyl heptenone, various terpenes and dipentene. The odor resembles lemon and the roots are often added to rice and other food preparations during cooking to impart the fragrance. The oil also has insecticidal properties.

The uses of tanglad are similar to those of other plants with volatile oils – carminative, diaphoretic, pain reliever, etc.

SUGGESTED PREPARATION AND USES

Decoction of Tanglad Roots – Either a decoction or infusion can be prepared using the roots. Since the roots contain volatile oils, it need not be boiled for too long a period (5-10 minutes). The decoction or infusion is particularly helpful as a diaphoretic for fever. Mixed with luya (ginger), the decoction can be used for stomach ailments. With paminta (pepper), the decoction is used for dysmenorrhea. The leaves of tanglad are also used for aromatic baths. There is no fixed dose for the roots.

Tanglad Roots with Coconut Oil – Tanglad roots crushed in coconut oil can be applied externally as a liniment for rheumatism, muscle pains and sprains. It could be tried for skin disease although tanglad has not been tested for antimicrobial or antifungal activity.

Family LILIACEAE

This family is a large one with many important medicinal plants. Drugs such as the veratrum alkaloids (hypotensive), colchicine (anti-gout), squill (cardiotonic and expectorant) and aloin (purgative) are obtained from members of this family. Most of the drugs are obtained from the roots and rhizomes of the plants.

The sarsaparillas, which we know today mainly as flavoring for soft drinks, are obtained from the various *Smilax* species, which belong to the lily family. The sarsaparillas are actually steroidal saponins. Their mode of action is not clear although they may stimulate absorption of other drugs. In the Philippines, as with many other countries, the *Smilax* plants are sometimes used in folk medicine, mainly for syphillis, rheumatism and skin diseases. Local species include banag[1], sarsaparillang-tsina[2] and sarsaparillang-puti[3].

Among the more common members of the lily family are sabila and bawang, which are dicussed below.

[1] *Smilax bracteata* Presl. [2] *Smilax china* L. [3] *Smilax leucophylla* Bl.

SABILA (Fig. 4) *Aloe barbadensis* Mill
Dilang-boaya, dilang-halo *(Bis.)* *Syn. Aloe vera* L.

Sabila contains various antharaquinone glycosides, mainly barbaloin. The glycosides are found in the juice. Sabila is the main source for the purgative "aloes".

When barbaloin and aloin are boiled with alcohol or mixed with acid, emodin is produced. The same thing happens when barbaloin and aloin are taken orally – they are broken down to emodin in the intestine. Emodin is the active cathartic principle.

Besides the glycosides, sabila contains slight traces of volatile oil, alkaloids, calcium and chlorides.

4 5 6

Fig. 4 – Sabila[*Aloe barbadensis* Mill.], with its cactus-like leaves, which are green with white spots.

Fig. 5 – Sibuyas tagalog [*Allium ascalonicum* L.] Fig. 6 – Bawang [*Allium sativum* L.]

Various uses for sabila have been reported. Perhaps the most familiar one is the use of the sap for baldness. One proprietary preparation available locally contains sabila and claims to be a cure for baldness. Small amounts of sabila's juice, mixed with water, is also sometimes used for indigestion and peptic ulcers. The juice increases bile secretions but prolonged use will result in hemorrhoids.

More recently, sabila has been advertised as the main ingredient of a very expensive skin cream, with claims that the use of sabila as a "beauty-aid" dates back to the time of Cleopatra.

On the practical side, sabila has been proven as a good remedy for burns. Several published reports cite sabila's effectivity in treating even third-degree burns. The action of sabila is one of promoting skin tissue regeneration.

SUGGESTED PREPARATIONS AND USES

Bruised fresh leaves can be applied on contusions (bruises) and localized edema. For baldness (alopecia) and falling hair, the *Philippine National Formulary* suggests the use of the cut leaves (after removing the spines) rubbed directly on the scalp after washing the hair. The juice of the fresh leaves can also be mixed with gogo (page 43) and used as a shampoo.

The sap can be collected from the leaves and applied fresh on burns, skin ulcers and various dermatitic conditions. Or, the fresh leaves can be split and applied on the burn, covered with wax paper and bandaged. The darkened mucilaginous material is washed off with water after an hour.

The use of the sap as a purgative is not recommended as it causes griping.

BAWANG (Fig. 6) *Allium sativum* L.
Ahos (Bis.)

The practice of carrying a piece of bawang or garlic to ward off evil spirits is probably based on the hope that the strong pungent odor would repel the spirits. Whether or not it has any effect on the spirit, bawang has been established to contain chemical constituents which have a broad spectrum of anti-bacterial, anti-fungal and anti-protozoal activity.

The antibiotic properties of bawang is due to the presence of sulfur-containing compounds in its volatile oil. The volatile oil is found mainly in the bulb. When the garlic bulb is crushed, alliin (S-allyl-L-cystein-sulfoxide) is converted into allicin (allyl disulfoxide.) Allicin has been found to inhibit a broad variety of Gram-positive and Gram-negative bacteria. Some of the bacteria against which allicin has been found to be effective are *Staphylococcus aureus, Klebsiella pneumoniae, Escherichia coli, Proteus vulgaris, Corynebacterium diptheriae, Pseudomonas aeruginosa, Salmonella typhi, Shigella dysenteriae and Serratia.* Indian researchers also reported garlic extracts to inhibit the growth of *Mycobacterium tuberculosis.* Some fungi (*Trichophyton* spp., *Microsporon* spp.) and protozoa *(Trichomonas)* have also found susceptible to allicin.

During the First World War, when antibiotics were still unavailable, fresh garlic juice was used with sphagnum moss to dress the wounds of soldiers. Various reports also cite the successful use of garlic in the treatment of skin diseases, including ringworm. In China, garlic is used for supportive therapy (in addition to Western drugs) in the treatment of amoebic dysentery.

Early in 1980, a Chinese report cited the use of garlic in the treatment of cryptococcal meningitis. Both oral and parenteral preparations were used.

There are other uses of garlic. Until recently, there was a proprietary preparation for high blood pressure with garlic as its main ingredient. Garlic is both a diuretic and vasodilator and the two actions are of help in hypertension.

In 1979, two American researchers isolated the hormone prostaglandin A_1 from onions and garlic. This hormone has hypotensive action.

Indian researchers report that extracts from garlic have hypoglycemic action. They speculate that the action is one of promoting better utilization of glucose.

Indian and German researchers report garlic to be hypolipemic and fibrinolytic. These two actions are of value in the prevention of atherosclerosis by preventing the accumulation of fat (cholesterol) in blood vessels.

Because of its volatile oil, garlic is a good expectorant. It also has anthelmintic properties.

Nutrition-wise, the leaves of garlic are good sources of vitamin A, calcium, phosphorus and folic acid.

SUGGESTED PREPARATIONS AND USES

Garlic Syrup – The simplest preparation for garlic is to use a pounded clove in a glass of honey or thick sugar water. This preparation is taken three to four times a day and can be used as an expectorant. To prepare syrup that can be stored, extract 20 ml of garlic juice and add a strong alcoholic beverage (5 ml). Allow the mixture to stand for two weeks and then filter. This concentrated mixture is then mixed with 80 g sugar, 20 ml dilute acetic acid or vinegar and 20 ml water. The dose is 2-8 ml daily. The mixture can be used as an expectorant, diaphoretic and diuretic.

For bacterial dysentery, a decoction using one clove mixed with sugar and water is given three times daily.

Garlic Retention Enema – For the treatment of bacterial and amoebic dysentery, 5 gm of garlic is boiled in 100 ml water. This is allowed to cool down and 70 ml is used as a retention enema, given daily for 6 days. For amoebic dysentery, this should be given together with other stronger amoebicidal drugs.

For treating pinworm infestations *(Enterobiasis)*, retention enema can also be used. Crush 90 gm garlic and soak in cold boiled water (250 ml) for 24 hours. Filter and use 20-30 ml of the fluid as retention enema every night just before bedtime. Continue for 7 nights.

Tincture of Garlic – A tincture is prepared using 5 gm garlic cloves for every 100 ml alcohol (tuba can be used). Allow the mixture to stand at least a week, agitating the mixture daily. Filter and use for wounds. The addition of atsuete (*Bixa orellana*) gives the tincture a red color. Use within one month.

External Uses – A mild decoction can be used as a wash for vaginal trichomoniasis. Garlic crushed and heated with coconut oil can be used externally for treating scabies, fungal infections, insect bites and stings. For headaches, arthritis and rheumatism, crush one or several cloves (*butil*) and apply on the affected areas. A clove of garlic can also be inserted in tooth cavities to reduce the toothache.

NOTES:

1. Garlic preparations should not be given orally to children.

2. It is better to use fresh garlic because the antibiotic properties of garlic decrease with storage. Always store garlic in a cool, dry but ventilated place. Use within six months after harvesting.

3. Garlic can cause irritation in the gastro-intestinal tract. Nausea is usually the side-effect. When this occurs, reduce the dose accordingly.

4. Other *Allium* spp. such as sibuyas or onions[1], sibuyas tagalog[2] and kutsay[3] also have antibiotic properties although they are generally weaker than bawang or garlic. Onions come closest to garlic in terms of expectorant, antibiotic and diuretic properties. The Indians' research on the hypoglycemic, hypolipemic and fibrinolytic activities of garlic also included onions and they found similar properties in onion, although again, these properties were weaker.

[1]*Allium cepa* L. [2]*A. ascalonicum* L. [3]*Allium odorum* L.

Family MUSACEAE

SAGING

Musa errans L.
Musa sapientum L.
Musa humilis (Perr) Teodoro

There are many types of bananas in the Philippines. There is the wild butuan [*Musa errans* (Blco) var. *botoan* Teodoro] cultivated edible varieties of *M. sapientum* L. (latundan, lakatan, bungulan, etc.) and commercial varieties such as the Giant Cavendish introduced more recently to meet export requirements.

Nutritionally, the fruit of banana is significant only in terms of its carbohydrate content, which is about 20-25% of the pulp. Vitamins and minerals are not found in particularly high amounts except in the wild butuan, which is fairly high in calcium and phosphorus but, as its name implies, has many seeds which makes it unpalatable to many people.

The flowers and dried heart (puso) are, however, significant sources of calcium, phosphorus and iron. Tuyong bulaklak or the dried flowers contains as much as 288 mg calcium, 214 mg phosphorus and 27 mg iron in each 100 gm serving.

Medicinally, the unripe fruit is astringent because of the presence of tannic and gallic acids. Pectin is also present in appreciable amounts in both the ripe and unripe fruits. The presence of tannins and pectin makes bananas useful in diarrhea.

Also present in banana (both pulp and peel of the fruit) are monoamines such as 5-hydroxytryptamine (5-HT or serotonin), 3, 4-dihydroxyphenyl-ethylamine (dopamine), noradrenaline

and adrenaline. The levels of these mono-amines differ with the variety of banana but is almost always higher in the unripe fruit. The significance of the presence of these amines, particularly 5-HT, is still a controversy since they are present in small amounts and may not be sufficient to exert any physiological effect on the body. But studies, particularly from India, claim that the 5-HT content makes banana valuable in the treatment of gastric ulcers. Using experimental animals where ulcers were induced (with chemicals such as histamine and phenylbutazone as well as physical restraint to bring stress) the researchers claim that emulsions from unripe bananas were found to help in the healing of the ulcers and were comparable to aluminum hydroxide in the rate of healing.

Whatever it is that is responsible, many published reports cite the value of banana in treating a variety of digestive disorders, including dysentery. It may be possible that the action is both chemical (combined action of tannin, pectin and the amines) and mechanical (an emulsion is always demulcent on the gastro-intestinal tract).

There have also been reports claiming success with the use of the sap from the trunk of banana trees for wounds. The sap is known to contain tannin, which would make it astringent. The mucilage in the sap probably also contributes to the wound-healing process. But there are probably other constituents, still unidentified, which may be responsible for the sap's action. Much work has been done on analyzing the chemical constituents of bananas but there is definitely room for more research. The fruit, for instance, has some 200 chemical substances responsible for its distinct odor.

Externally, banana also has its uses. Softened over low heat, its young leaves make excellent dressing for inflamed skin as well as for wounds. The interior of the trunk of banana trees is cool and can be used as a cold pack for fever. Some rural health workers have also found the trunk useful for storing vaccines for short periods of time.

Undoubtedly, there are other uses for banana in folk medicine and since banana is in no way toxic, these uses should be documented and studied. Like the many uses of rice, banana's applications may often be so simple they are overlooked or disregarded.

SUGGESTED PREPARATIONS AND USES

Fruit of Banana – The unripe fruit can be eaten to help control diarrhea. The ripe fruit can also be used although its pectin and tannin content is lower. The fruit can be mashed with milk or sugar water to make an emulsion for patients with diarrhea, gastritis, ulcers and other digestive disorders. A common practice is to combine banana with sampalok (page 45) and a little salt for added astringent effect in treating diarrhea.

Banana Powder – Peel and make thin slices of green (unripe) *latundan*. Sun-dry for one whole day or heat over an oven with low temperature for two hours until the slices are dry and crisp. Grind or pound to make a powder then store in sealed plastic bags or any tightly covered container. Use 1-4 teaspoons of the powder at a time, mixing it with soup, rice gruel (lugao) or a sugar and salt water solution. The pectin in banana helps to control diarrhea. It also provides potassium, which the body loses during diarrhea.

Tuyong Bulaklak – The dried flowers of banana are rich in iron and calcium. It should be one of the suggested dietary supplements for anemic patients.

Young Leaves – Soften young leaves by warming them over a low fire or over coals (uling). Coconut oil can be added and the leaves applied as a dressing for wounds, blisters and other conditions where the skin is inflamed.

Sap from the Trunk – The sap from the trunk can be applied on wounds as an astringent and styptic.

Family PALMAE

Like other tropical countries, the Philippines has numerous species of palms, which serve as sources of food, beverages, household utensils, building materials and even as medicine. Among the palms used medicinally, the two most familiar ones are bunga[1] and niyog[2] although other palms such as buri [3], nipa[4], and kaong[5] all have their peculiar uses depending on the region and distribution of these palms.

[1] *Areca catechu L.*
[2] *Cocos nucifera* L.
[3] *Corypha elata* Roxb.
[4] *Nypa fructicans* Wurmb.
[5] *Arenga pinnata* (Wurmb) *Merr.*

BUNGA — *Areca catechu* L.

Bua *(Ilk.);* takobtob *(Bik.)*

Bunga or betel nut is chewed together with ikmo or buyo *(Piper betle* L.) and apog (lime). The practice is widespread through Asia, although it is said to be harmful because it causes loss of appetite and ulcerations in the mouth.

The effect of chewing betel nut is one of stimulation. This is due to the presence of several alkaloids in the nut, mainly arecoline, arecaine, traces of arecaidine, guavacoline, guavacine and other alkaloids with similar chemical structures.

Some of the effects of the arecoline alkaloids are an increase in saliva flow, a mild feeling of exhiliration (for new users, flushing in the face), stimulation of gastro-intestinal movements, constriction of bronchial muscles and a drop in blood pressure.

The nut has been found to be an effective taenifuge. Its action against tapeworms is due to the arecoline alkaloids. Although the use of arecoline is no longer practiced in the West, it continues to find practical and effective application in many Asian countries.

Besides the arecoline alkaloids, betel nut also contains tannic and gallic acids, which make the nut astringent.

SUGGESTED PREPARATIONS AND USES

Decoction of Betel Nut – A decoction of betel nut can be used as an anthelmintic although its action is more effective against tapeworms than roundworms. Boil the nuts for 20-30 minutes and let the decoction cool before administering. Take on an empty stomach. No purgative is needed. The dose for children below 12 years of age is 30 gm or less of the nuts. For children above 12 years of age, 50-60 gm can be used while for adults, the dose is 80-90 gm.

Decoction of Betel Nut and Kalabasa Seeds – A combination of betel nut and kalabasa is used for better effect. Betel nut acts mainly on the anterior segment of tapeworms while kalabasa seeds are more effective on the middle and posterior segments. Use the doses above for betel nut together with 70-100 gm kalabasa seeds and boil in 500 ml. water for an hour. The decoction should be about 150-200 ml after one hour of boiling. Add water again to make 500 ml. Give on an empty stomach early in the morning.

Bunga Enema – Because of arecoline's toxicity, it may be safer to use bunga as an enema. Boil 50 gm of the nut in one liter (about 8 cups) of water. Use one glass as an enema and retain for one hour.

PRECAUTIONS

The arecoline alkaloids are strong-acting. Follow the prescribed dosages carefully and keep patients under observation for at least 12 hours. Signs of toxicity include vomiting, continuous diarrhea, difficulty in breathing. The antidote is adrenaline or atropine.

Because of the toxicity of arecoline, other uses of betel nut (usually for stomach ache) should not be encouraged.

NIYOG *Cocos nucifera* L.

Lubi (*Bis.*)

Niyog or coconut has often been called the "Tree of Life", and for good reason. All the parts of this sturdy, long-living palm, from the husk of the nut down to the roots, have found some use. Among the numerous uses of coconut, several are medicinal.

The husk, for instance, can be burned to yield charcoal useful for diarrhea. The charcoal from coconut is one of the best adsorbents. During the First World War, large quantities of charcoal from coconut were used for gas masks. As an anti-diarrhea drug, charcoal acts as a protective and adsorbent. It lines the intestinal tract, protecting it from further irritation and adsorbing excess water as well as harmful substances that may have been taken in.

There is a local practice of burning coconut husks and collecting the soot (black condensed material) by putting a basin over the burning husks. The oily substance collected is used for wounds and for toothaches. An analysis made of this oil showed it had some amount of phenol, which has germicidal action.

Lana or coconut oil is another product often used in folk medicine. It is a convenient base for many drugs, particularly for skin afflictions. The oil is very stable and has been found to have antiseptic properties. (Significant anti-fungal properties have been reported.) A high grade purified coconut oil called "water white coconut oil" has been developed by the National Institute of Science and Technology. The oil can be used as a solvent for injections. Coconut oil consists mainly of lauric and myristic acids. Other fatty acids present are caprylic, capric, palmitic, stearic, palmitoleic, oleic and linoleic.

Coconut water has several uses besides making tuba. It is a mild laxative because of its oil content. Yet, it has great potential for use in diarrhea as a rehydrating agent. The water can be taken orally or given intravenously as a dextrose substitute. Several studies have reported the use of coconut water intravenously without side effects. Coconut water is very similar to fluids within the body. It has large quantities of potassium and low levels of sodium, chloride and phosphorus. In the young coconut, 3 to 8 gm of sugar are found in every 100 ml of the water. The sugars are mainly glucose and fructose and, like dextrose, they provide a good source of energy for the patient. Both the fat and protein content of coconut water are low, although as many as 12 different amino acids have been found present.

Because of the potassium content, coconut water is also a good diuretic. It has been found particularly useful for ailments of the genito-urinary system, including calculi or stones.

Gata or coconut milk is a potential substitute for cow's milk. Santan, or cocohoney, can be used as a base for syrups.

SUGGESTED PREPARATIONS AND USES

Coconut Charcoal – Burn the husk to obtain charcoal. The charcoal is not purified carbon but is still serves as a good adsorbent for diarrhea. Crush the charcoal well to obtain a fine powder and give 1/2 to 1 teaspoonful 3-4 times daily with water. It should be remembered that charcoal's adsorbent action is not selective and that it may adsorb other nutrients and drugs being given to the patient. A proper interval of 1/2 to 1 hour should therefore be observed before giving other drugs and/or food following the use of charcoal. The charcoal can also be used as an antidote for poisoning.

Lana (Coconut Oil) – The oil is a good base for applying other drugs, particularly for skin diseases. It can also be used alone. As with other ointments, coconut oil (and whatever drugs are incorporated with it) would be most effective where the skin is dry or scaly, especially on the scalp.

Coconut Water – As a laxative, take the juice of 1-2 coconuts on an empty stomach As a diuretic, take as much of the water as can be tolerated.

For purposes of oral rehydration, studies are still being made on the best age of the nut from which water can be taken. The best age of the nut to be used for intravenous administration has been suggested at 7 months because this is the time when the sugar level is at its highest

The same rule could probably apply in choosing a nut to be used for oral rehydration.

If coconut water is to be used intravenously, aseptic (sterile) methods should be used. Coconut water, once contaminated, is an excellent medium for bacteria to grow in. Check the shell of the nut and make sure there are no cracks. As long as the shell is intact, the water inside is sterile.

Although the water can be administered directly from the nut, it is better to transfer the water to another container to filter out some of the sediments that may be in the water. The method for transferring the water is described below:*

Cut the ends of the nut 1 to 1-1/2 inch into the soft meaty substance. Swab the cut surfaces with alcohol and allow it to evaporate. Then insert a dry, sterile trocar or any hollow tube into the nut's cavity. The water is passed through a sterile glass funnel packed with sterile gauze. Used dextrose bottles, properly sterilized, can be used to collect the coconut water. Stopper the bottle after collecting and use as soon as possible. Since facilities for cold storage are absent in most of our rural areas, it would be better to keep sterile bottles and other equipment for collection ready at all times and to collect the water only when needed.

*From Goldsmith, H.S. 1962. Coconut water for intravenous therapy. *Brit. J. Surg.* 49:421-422. The article also cites the studies of other physicians in the U.S., Thailand and Sri Lanka, all of whom report favorable results with the intravenous use of coconut water.

Family PANDANACEAE

The sap from the trunk of pandan or pandang-dagat *(Pandanus tectorius* Solander) is often used locally for calculi (urinary stones), while a decoction of the roots was at one time used (sometimes together with the sap from the trunk of banana) as a urethral injection for infections of the urinary tract. Other than potassium in the aerial roots, which would make the plant diuretic, it has not been established if there are other chemical constituents of antibacterial value.

Pandang mabango [*Pandanus amaryllifolius* Roxb.] resembles pinya (pineapple) more than it resembles pandan (which is a tree). Pandang mabango, as its name implies, contains an aromatic volatile oil. The oil is used in other countries as a purgative, cardiotonic and cephalic (for headaches) as well as for wounds, with one writer claiming that the oil has antiseptic properties comparable to that of eucalyptus oil.

The *Philippine National Formulary* suggests the use of the roots in decoction as a diuretic. For headache and rheumatism, the leaves can be crushed, mixed with oil and applied on the affected areas. Either pandan or pandang mabango can be used.

Family ZINGIBERACEAE

The ginger family is noted for its volatile oils, which are concentrated mainly in their rhizomes or underground roots. Besides the familiar luya or ginger, other plants from this family used medicinally include dilaw[1], luya-luyahan[2], gisol[3], kamia[4] and langkawas[5].

[1] *Curcuma domestica* Valet or *Curcuma longa* L.

[2] *Curcuma zedoaria* (Berg.) Rosc.

[3] *Kaempferia galanga* L.

[4] *Hedychium coronarium* Koenig

7

8

Fig. 7 – Luya [*Zingiber officinale* Rosc.]

Fig. 8 – Dilaw [*Curcuma longa* L.]

LUYA (Fig. 7) *Zingiber officinale* Rosc.

Baseng, laya (*Ilk.*)

The rhizomes of luya contain 1-3.% volatile oil, mainly gingerone, phellandrene, camphene, cineol, borneol and citral. Also present is gingerol, a non-volatile oil responsible for ginger's distinctive odor. Gingerol is found in the resin.

Luya is one of the most widely used medicinal plants. It is used mainly for disorders of the digestive system. It is an efficient sialogogue (stimulating salivary secretion) and is useful for nausea and vomiting. Taken as a decoction (salabat or tahu), luya has a warming effect on the stomach and is good for treating indigestion, flatulence, colic and other stomach pains where the causes are not due to infectious agents.

Salabat is useful for respiratory disorders as it resolves phlegm and warms the respiratory passages. Antifungal and antibacterial activity have been reported in aqueous and alcoholic extracts of luya.

Externally, the application of luya for headaches, muscle and joint pains is of some value because of the volatile oil's warming effect.

SUGGESTED PREPARATIONS AND USES

Fresh or Dried Luya – A slice of fresh or dried rhizome can be chewed to relieve nausea and vomiting. It is also used to prevent stomach pain (griping) when purgatives are administered.

Externally, a slice of luya heated or roasted can be applied for headaches, muscle and joint pains. The juice from fresh luya can be applied on superficial cuts and wounds as an antiseptic. Another way of using luya externally is to heat thin slices with oil. After the oil cools down, it can be used for rheumatism by rubbing the oil on the painful areas.

Salabat or Tahu – A decoction of luya can be used for indigestion, flatulence, colic, vomiting. It is also useful for coughing, sore throat and other respiratory disorders. Fresh luya is preferable in preparing the salabat but in areas where luya is not always available, salabat powder can be prepared and stored.

Salabat Powder – Grind, chop or crush luya to extract the juice. Dissolve 2 parts brown sugar for every 1 part of ginger juice and boil the mixture in a heavy pan until thick and sugary (granular). Remove from the heat as soon as the mixture starts drying on the sides and continue stirring until the mixture becomes powderized. If the mixture carmelizes (hardens), add boiling water and heat again to dissolve.

Store the powder in dry containers.

Strong Ginger Tincture – Use 50 g peeled fresh ginger with enough 90% alcohol (e.g. tuba) to make 100 ml. The tincture can be used for coughing, stomach ache, gas pain. Dose 0.25 to 0.5 ml.

Weak Ginger Tincture – Prepare the strong tincture described above. Use 20 ml of the strong tincture with 90% alcohol (again, tuba or any strong alcoholic beverage) to make 100 ml. The tincture is used for the same conditions as the stronger version but the dose can be increased to 1.5 to 3.0 ml.

Ginger Syrup – Use 5 ml of the strong tincture plus enough syrup (Cf. Appendix II – Common Drug Preparations) to make 100 ml. The dose is 2-5 ml.

Mixtures

There are numerous variations in the use of luya. It can be mixed with other medicinal plants as decoctions or syrups. Or the juice can be used to flavor other drug preparations. Two popular examples of luya mixed with other medicinal plants are described as below:

SLK Cough Syrup – Use one handful of thinly sliced luya rhizomes and one handful of sampalok (page 45). Boil the luya and sampalok in water for about 15 minutes to make a decoction. Then strain to remove the plant materials. For every part liquid (decoction), add two parts sugar. Boil the decoction and sugar until the mixture becomes thick (syrupy). Allow the mixture to cool down and then add the juice of kalamansi (page 62) for flavoring. Add ½ teaspoon sodium benzoate for every liter (8 cups) of the mixture to allow the syrup to keep longer. The dose of the cough syrup varies: 1-2 teaspoonful every 3-4 hours.

Variations of this cough syrup can be made. Instead of luya and sampalok, other plants with volatile oil can be used, e.g. lagundi (page 72), alagaw (page 72) or sambong (page 28). Kalamansi can also be substituted by other vitamin C-rich fruits like bayabas (page 55) or guayabano (page 15).

A little gin can also be added to the syrup for adults. The alcohol helps to reduce the coughing.

BLS Oil – Use equal parts of chopped bawang (page 8), luya rhizomes and crushed siling labuyo (page 66). Heat this with an equal amount of coconut oil. For example, if the bawang, luya and siling labuyo come out to three cups, then also use three cups of coconut oil.

Heat the mixture together for 10-15 minutes and then strain. The oil can be used externally for muscle pains, sprains and rheumatism.

This oil acts on the principle of giving heat to the skin. The heat relaxes the muscle and reduces pain. Instead of siling labuyo, other "warm" plants such as paminta (page 58) or ikmo (page 58) can be used.

DILAW (Fig. 8) — *Curcuma longa* L.
LUYA-LUYAHAN — *Curcuma zedoaria* (Berg.) Rosc.

Dilaw (turmeric) and luya-luyahan bear close resemblance to luya except that their rhizomes have a pale yellow color. Many of luya's uses are the same with dilaw and luya-luyahan (carminative, rubefacient, mild antiseptic) although dilaw and luya-luyahan are not known as expectorants.

Among the Chinese, dilaw and luya-luyahan are often cited as analgesics and emmenagogues. Dilaw is also a popular plant in Asian countries for liver ailments and diseases of the biliary ducts. The theory is that the yellow dye (curcumin) found in these plants may stimulate contraction of the gall-bladder to increase bile production.

In Indonesia, two types of "dilaw" are differentiated. One is "temu kunir" [*C. domestica* Val. or *C. longa* L. var minor] and the other is "temu lawak" [*C. xanthorrhiza* Roxb. or *C. longa*

L. var. *major*]. "Temu kunir" has smaller rhizomes and has less essential or volatile oil than "temu lawak."

SUGGESTED PREPARATIONS AND USES

Decoction of Dilaw/Luya-luyahan – Use 4.5 to 9 gm of the dried rhizomes. It is used for chest and abdominal pains, irregular menstruation. Externally, it is used for wounds and contusions.

CONTRAINDICATIONS: Dilaw and luya-luyahan should not be used by pregnant women.

DICOTYLEDONAE

Family **ACANTHACEAE**

Fig. 9 – Kalpueng [*Graptophyllum pictum* (L.) Griff.] is commonly planted as a hedge. There are two varieties – one with green leaves blotched with white and the other with dark purple leaves.

Fig. 10 – Sinta [*Andrographis paniculata* (Burm f) Nees] is a herb that grows up to 3 m. Its flowers are white with purple spots.

Kalpueng [*Graptophyllum pictum* (L.) Griff. – Fig. 9] has been reported to be effective for treating stab and bite wounds, including those which are suppurating (with pus). The Indonesian report suggests that the mashed leaves be applied directly on the wound, with a change of dressing every 6 hours. Sepsis reportedly disappears within 24 hours. An alkaloid has been reported present in the plant. A local study found fats, peptic substances and formic acid in the leaves and stems.

Sinta [Bicol name for *Andrographis paniculata* (Burm f) Nees. – Fig. 10] is the source of glycosides (andrographolide, neoandrographolide) with significant antibiotic properties. In China, the glycosides are now produced in tablet and injectable forms and are used for a variety of

inflammatory conditions, particularly in the respiratory and digestive systems. In its crude form, 3-9 gm. of the dried plant is used in decoction for colds, bronchitis, pharyngo-laryngitis, pneumonitis, dysentery. The Chinese claim that its antibiotic properties are comparable to penicillin G and chloramphenicol. Unfortunately, the plant is not widely known in the Philippines although it is now commercially cultivated in Indonesia.

Family ANACARDIACEAE

This family has a number of poisonous plants which have, in their stems and leaves, acrid substances that are irritating to the skin and mucous membranes. At the same time, two trees belonging to this family are noted for their fruits.

The first is kasoy or cashew [*Anacardium occidentale* L.] with its peculiar looking fruit. The fruit is a rich source of vitamin C. However, a poisonous oil is found in the pericarp (shell) of the fruit. The oil contains cardol and anacardic acid and is insecticidal. It is also poisonous to livestock. Seeds burned in the open will release fumes which can kill smaller animals like poultry. The fumes are irritating to the eyes and mucous membranes of the nose and throat in human beings.

Applied externally, the oil of kasoy can cause blister formation, but a preparation from cardol was used in Europe for the treatment of warts and corns. Also, the oil of kasoy has been used against human ancylostomiasis (hookworm infections). The oil is enclosed in capsules and is given 4-6 gm in adults and 3-4 gm in adults and 3-4 gm in children. This is given to the patient on an empty stomach and is repeated 3-4 times at 15-day intervals.

The *Philippine National Formulary* also endorses the use of kasoy's bark and leaves as an astringent mouthwash for toothaches, sore gums and sore throats. The mouthwash should be prepared in very diluted form (as an infusion) and the user should not swallow the infusion. The active principle in the bark and leaves is tannin.

Tannin is also found in the barks and leaves of mangga [*Mangifera indica* L.] which is why the *Philippine National Formulary* recommends the use of mangga's bark and kernels (seeds), in decoction, as an antidiarrheal.

In folk medicine, the leaves of mangga are often used in aromatic baths. This is because of the volatile oil found in the leaves. The *Philippine National Formulary* lists an infusion of young mangga leaves for coughing.

There are different varieties of mangga, e.g. kalabao, piko, etc. All these fruits, ripe or unripe, are good sources of vitamin C.

Family ANONACEAE

The anonas family includes three common fruit trees: guayabano *(Anona muricata* L.), anonas (A. *reticulata* L.) and atis (*A. squamosa* L). The three fruits are useful in diarrhea because of their pectin content. They are also good souces of vitamin C. In addition, the seeds of atis and anonas contain alkaloids with insecticidal properties and can be crushed and applied, with oil, for hair lice (kuto) and scabies.

Another member of this family, kalimatas [*Phaenthus ebracteolatus* (Presl.) Merr.] has been the subject of many studies because its alkaloids have been found to have marked hypotensive and muscle relaxant properties. And still another member, hilagak *(Uvaria rufa* Blume), is being investigated because of the presence of alkaloids with anti-tumor activity.

Family APOCYNACEAE

This family has many medicinal plants which can be divided into three categories based on their main physiological active constituents:

GLYCOSIDES:

The Apocynaceae has several plants with cardiac gycosides acting similarly to digitalis. Two local species are used as arrow poisons: abuhab-baging [*Strophanthus cumingi* A. DC.] and sarsara [*Strophanthus letei* Merr.]. Both vines contain saponins which act on the heart, the blood pressure and respiration with actions similar to ouabain (G-strophanthin).

In contrast to the vines, we have two plants whose attractive flowers make them popular oranamentals: adelfa [*Nerium indicum* Mill. – Fig. 11] and kampanyero [*Thevetia peruviana* (Pers.) Merr. Fig. 12]. Oleandrin from adelfa leaves and thevetin from kampanyero seeds are both cardiac glycosides with actions similar to digitalis.

Digitalis is a drug still widely used in Western medicine for cardiac ailments. It was originally derived from the leaves of two species of *Digitalis* or foxglove. Digitalis slows the hearbeat and helps in regulating the tone, which makes it useful for certain cardiac disorders. Digitalis has been a very useful drug and undoubtedly, our local plants with cardiac glycosides can also be tapped. However, cardiac glycosides are powerful drugs and it is unfortunate that the safe therapeutic dose using local plants has not been determined.*

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Fig. 11 – Adelfa [*Nerium indicum* Mill.] with white, pink or red flowers.
Fig. 12 – Kampanyero [*Thevetia peruviana* (Pers.) Merr.] with yellow, bell-shaped flowers.

*In China, adelfa leaves are used as a digitalis substitute with good results. The leaves are dried under low temperature and are crushed and taken orally – 310 to 370 mg on the 1st day, 250 to 370 mg on the 2nd and 3rd day. After this, maintenance dose of 90 mg is given daily until symptoms disappear. Daily doses are given in 2-3 divided doses. It is assumed that with such small therepeutic doses, the preparation and administration of the leaves are done under supervision.

Both adelfa and kampanyero are also used externally, mainly for skin ailments. The *Philippine National Formulary* recommends the use of adelfa for herpes zoster. The crushed leaves should be mixed with oil and applied on the lesions. The preparation should not be applied on raw surfaces and a warning is given on the milky juice (latex) being irritating. In folk medicine, the powdered bark and leaves of adelfa and kampanyero are mixed with oil and used for herpes and ringworm. The plants' effectivity may be due to the combined action of glycosides and tannin. Since these plants have very powerful chemicals, they should not be used internally.

LACTONES

Two common ornamentals of this family contain lactones: kampanilya [*Allamanda cathartica* L.] and kalatsutsi [*Plumiera acuminata* Ait].

The lactones are known cathartics. A decoction of the bark or latex of kalatsutsi is used in folk medicine as a purgative while the leaves of kampanilya, as its scientific name suggest, have long been in use in tropical countries as a cathartic.

Among the lactones found in these plant is plumierid. Early studies made in the Philippines showed that 0.2-0.4 gm of plumierid (about 1 gm of kalatsutsi bark) had a purgative effect but produced only slight abdominal pain. Plumierid was also said to regulate bowel movements, producing catharsis first but eventually allowing bowel movements to return to normal.

In 1951, Japanese researchers reported that fulvoplumierin, another lactone from kalatsutsi, inhibited the growth of *Mycobacterium tuberculosis 607*. There has been no recorded follow-up of the study.

Among community-based health programs, kalatsutsi bark is used in the treatment of scabies. One cup of the chopped bark is boiled in one cup of coconut oil and the oil is applied on affected areas two or three times daily. Areas with pus are first treated with bawang (page 8).

The *Philippine National Formulary* also suggests the use of the latex, warmed in coconut oil, for arthritis, rheumatism and itching. However, this preparation should not be used on open wounds or lesions because the latex is irritating.

ALKALOIDS

The Apocynaceae family is noted for plants with alkaloids. Many of these alkaloids are now used in commercial drug preparations.

A good example is reserpine, which is still widely used in western drug preparations as a mild tranquilizer and a potent hypotensive. The commercial source of reserpine is *Rauvolfia serpentina* Benth., which has been introduced locally and is being cultivated in government plantations. Besides *R. serpentina,* two local plants have also been found to contain reserpine and similar alkaloids – sibakong [*R. amsoniaefolia* A. DC.] and kanda-sa-tahok [*R. samarensis* Merr. or *R. palawensis* Elm. – Fig. 13]. Traditionally, rauvolfia plants have been used in Asian countries as gastric sedatives, uterine stimulants and in India, for the treatment of mental diseases. All of these uses have been found to have bais because of the reserpine alkaloids found in these plants.

A favorite plant among local researchers is laneteng-gubat [*Kibatalia gitingensis* (Elm.) Woods] with an azasteroidal alkaloid called gitingensine which has been shown to be a potent smooth muscle relaxant and therefore a potential anti-spasmodic. Gitingensine is also reported to be antibacterial, antifungal, anabolic and hypotensive. Unfortunately, there have been no reports on safe effective doses to use although this forest tree is used by many folk healers, particularly as an anti-spasmodic in diarrhea.

Another local plant that is being studied extensively is pandakaki [*Ervatamia pandacaqui* Poir– Fig. 14]. Alkaloids extracted from pandakaki have been found to have significant anticancer activity. Traditionally, this plant's latex is a popular remedy for wounds. The plant is also used traditionally for gastroenteritis (roots and bark) and as an emmenagogue (leaves applied on

the abdomen). The plants effectivity can be attributed to its alkaloids. In addition, glycosides and tannins have been found present in pandakaki.

Two other common medicinal plants from this family are discussed below:

DITA (Fig. 15) *Alstonia scholaris* (L.) R. Br. var. *scholaris*
(D) alipauen (*Ilk.*); milky pine (*Eng.*)

Dita is used in many Asian countries as a folk remedy for malaria and fever. Reports conflict on the value of the plant as an anti-malarial, with some researchers claiming that an extract from the bark does not have any effect on malaria parasites *in vitro*. It is possible that reports of cures for malaria were made on the basis of temporary recovery from fever since dita's alkaloids do have a depressant action on medullary centers – this action can bring down fever.

SUGGESTED PREPARATIONS AND USES

Decoction of Dita Bark – The *Philippine National Formulary* recommends the use of a 1% decoction of dita bark for fever and chronic diarrhea. A 5% decoction of dita bark is also recommended for use against malaria. (A 1% decoction is prepared using 1 gm. of the plant material for every 100 ml. of water. For a 5% decoction, use 5 gm. of plant material for every 100 ml. of water.)

The official *Chinese Pharmacopoeia* lists dita as an antitussive. It recommends 6-9 gm. of dried dita leaves in decoction for chronic bronchitis and whooping cough.

The use of dita in diarrhea and coughing can be attributed to its alkaloids' depressant action on the central nervous system.

Dita Latex – The *Philippine National Formulary* suggests the use of dita's latex as a poultice for boils.

PRECAUTIONS: Stop using dita if there is vomiting, ringing of the ears or blurring of vision.

NOTE: Batino [*Alstonia macrophylla* Wall.] is a close relative of dita. It also contains alkaloids with antipyretic effect. The alkaloids are being studied also as hypotensive agents. The *Philippine National Formulary* cites the use of batino leaves for sprains, bruises and contusions. The crushed leaves are mixed with a little coconut oil, warmed and applied on affected areas

TSITSIRIKA (Fig. 16) *Catharanthus roseus* (L.) Don.
San Pedro (Ilk.) *Syn Lochnera rosea* (L) Reinchb.

About 20 years ago, some American and Canadian researchers were investigating tsitsirika because of reports of its being an effective antidiabetic. The researchers were not able to find any basis for the plant's use as an anti-diabetic but discovered, accidently, that the plant had anti-cancer activity. Within a few years after the discovery, purified alkaloids from the plant were, and are still being used for the treatment of certain types of cancer.

In the last 15 years, research has continued in the West and has shown tsitsirika to contain an extraordinary variety of alkaloids of different actions. Locally, work is now going on to produce the anti-cancer alkaloids in purified form. Large quantities of plant material (mainly roots) are needed to produce a small amount of the alkaloids for actual therapeutic use.

As for the anti-diabetic reputation of tsitsirika, this has long been shown to be insignificant. Slight improvements in diabetic patients taking the plant decoction are attributed to the presence of trace amounts of other alkaloids (including reserpine) which have a diuretic effect and which give the patient a slight feeling of euphoria or well-being. As a whole, the total plant alkaloids (.5 to 8% in dried leaves) possess limited antibiotic activity with sustained hypotensive action. No hypoglycemic effect has been demonstrated.

Nevertheless, the continuing discoveries of new alkaloids in this common plant hold promise for other possible uses, besides its present service as a source of anti-cancer drugs.

SUGGESTED PREPARATIONS AND USES

Decoction of Tsitsirika – A decoction of tsitsirika leaves or the whole plant can be used as a mild tranquillizer, diuretic and hypotensive. Use 9-15 gm fresh material or 5-9 gm dried material.

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Fig. 13 – Kanda sa tahok [*Rauvolfia samarensis* Merr.] is a shrub that grows up to 8 m high with white flowers and round purple fruits.

14 – Pandakaki [*Ervatamia pandacaqui* (Poir.) Pich.] is a shrub 1-4 m. high with white flowers and red or yellowish-red fruits which are follicle-shaped.

15 – Dita [*Alstonia scholaris* (L.) R. Br. var. *scholaris*] is a tall tree (6-20 m) with dark grey bark. Its leaves are grouped in whorls of 4 to 7 and resemble the leaves of kalatsutsi.

16 – Tsitsirika [*Catharanthus roseus* (L.) Don.] is a common shrub with white, purple, pink or red flowers borne in pairs on the tips of the branches.

Family BALSAMINACEAE

Kamantigi [*Impatiens balsamina* L.] is sometimes used in the Philippines as a poultice for felons (boils). It contains several phenolic compounds and fixed oil in the seeds. Sulfur and pectic substances have been found in the leaves.

The seeds stimulate uterine contraction and are used in China to induce labor (ground seeds, 1-1.5 gm in decoction). The seeds have also been found to be contraceptive in experimental animals.

In combination with other plants, the seeds are used in treating trichomoniasis and lymphangeitis. In more recent years, the Chinese have been using kamantigi seeds as part of drug preparations for the treatment of cancer.

The flowers have been found to be effective in treating fungal skin diseases, particularly ringworm.

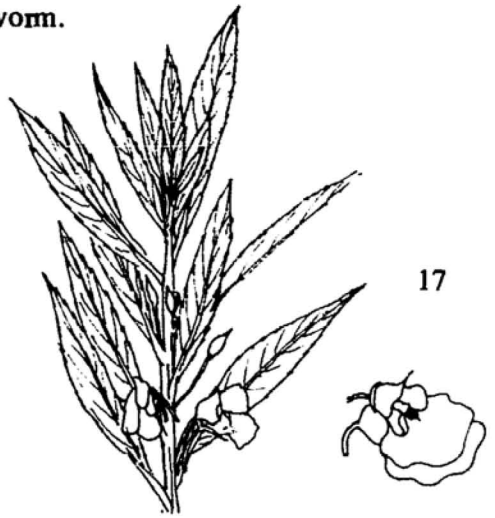

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Fig. 17 – Kamantigi [*Impatiens balsamina* L.], a small plant (1 m or less) with pink, white, red or purple flowers and hairy fruits.

Fig. 18 – Atsuete [*Bixa orellana* L.], a tree 4 to 6 m high with white or pinkish flowers and green or reddish-purple fruits which contain small, dark red seeds.

Family BIXACEAE

Atsuete [*Bixa orellana* L. Fig. 18] is familiar because of its red seeds, from which a dye (anatto) is obtained. The dye is commonly used as food coloring.

Medicinally, the seeds are commonly used in decoction for stomach ache and as a febrifuge. Externally, they are used for wounds (particularly as a hemostatic), burns and various skin diseases. The seeds are also said to be an antidote to cassava (*Manihot esculenta* Crantz.) and tubang-bakod (*Jatropha curcas* L.) poisoning.

The seeds yield volatile oil, traces of alkaloids, saponin, tannin and bixin, which is the colored material. The seed coat has waxes, volatile oil and fixed oil.

It is possible that the seeds have some antibiotic activity – many plant dyes exhibit such properties. Its tannin content would also make it useful as an astringent for diarrhea and for external wounds.

More research needs to be carried out on this popular plant.

Family BORAGINACEAE

Members of this family usually contain alkaloids. One popular medicinal plant is trompa ng elepante [*Heliotropium indicum* L.] which is used as an expectorant, a wash for wounds, boils and skin diseases and as eye drops (juice of leaves mixed with salt) for conjunctivitis.

Besides tannin, trompa ng elepante contains indicine and indicine, which are pyrrolizidine alkaloids (also known as Senecio alkaloids). The pyrrolizidine alkaloids have been shown to have no significant medicinal value and have numerous toxic effects. It damages the liver and in high doses can cause cancer. Children affected by the alkaloids often show signs that are mistaken for malnutrition. Pregnant women who take plants with these alkaloids run the risk of delivering deformed children. Other organs affected by these alkaloids are the lungs, heart, vascular system, pancreas, brain and kidney.

Pyrrolizidine alkaloids have been identified in about 200 species of *Crotolaria* and some species of *Senecio, Heliotropium, Cynoglossum* and *Trichodesma.* Fortunately, except for trompa ng elepante, other plants from these genera are not known to be in popular use as medicinal plants in the Philippines. Nevertheless, it would be worthwhile for local researchers to screen local species of these genera for the pyrrolizidine alkaloids. Some of the *Crotolaria* plants, for instance, may be accidentally eaten by grazing animals. As for trompa ng elepante, more work could be done to assess its actual toxicity and to establish if it can be used at least externally.

Another fairly popular medicinal plant from this family is tsang-gubat [*Ehretia macrophylla* Lam.]. As its name implies, it is often used as tea. The tea preparation or infusion is used for diarrhea and coughing while a decoction of the root is used as an antidote to vegetable poisoning. The plant has not been investigated in depth. There are abundant alkaloids in the leaves, saponin in the leaves and stem, glycosides in the leaves, stems and seeds.

A close relative of tsang-gubat is alibungog [*Ehretia philippinensis* A. D.C.]. Like tsang-gubat, it grows wild in the forests. There is an interesting account in Quisumbing's *Medicinal Plants of the Philippines* citing the report of a physician's successful use of the plant in treating various types of wounds, toothache, cataract and dysentery. The physician speculated that alibungog contains a counter-irritant, emollient substance which induces hyperemia. There are no available reports on the chemical constituents.

Perhaps the best known medicinal plant from this family is comfrey [*Symphytum officinale* L.] although the plant was introduced fairly late in the Philippines:

COMFREY *Symphytum officinale* L.

Comfrey's medicinal properties are attributed mainly to allantoin although the plant also contains alkaloids in the leaves, stems, roots as well as saponins, glycosides and tannins. Its protein content has been reported to be as high as 36%, including the amino acid methionine, which helps in wound healing and in the formation of epithelial tissue. The plant is a good source of the B-complex vitamins as well as vitamins A, C and E. Minerals such as iron, calcium, phosphorus and manganese are also reported to be abundant in the plant.

Many medicinal effects are attributed to comfrey although the general use seems to be one of a tonic or alterative. A decoction of the leaves and roots is used for internal hemorrhage while a leaf infusion is used for coughing and respiratory disorders. Externally, it is used for sprains, swellings, bruishes, boils, abscesses, open cuts and wounds. It is said to be particularly effective for wounds because allantoin acts as a cell proliferant, i.e. it helps the tissue regenerate.

SUGGESTED PREPARATIONS AND USES

External Uses – Fresh leaves can be applied as a poultice for the conditions given above (boils, abscesses, etc.)

CAUTION: Comfrey is an over-rated medicinal plant. Australian studies have identified pyrrolizidine alkaloids in the plant and in Indonesia, the sale of comfrey has been banned. This plant should not be used as agua tiempo (daily drink).

Family **BURSERACEAE**

PILI *Canarium luzonicum* (Blume) A. Gray
Syn *C. ovatum* Endl.

Pili nut is a favorite delicacy identified with the Bikol region where the production and processing of the nut is a small industry in itself.

The Philippines used to export large quantities of *brea blanca* or Manila elemi, the oleoresin obtained from the trunk of the pili tree. Manila elemi was widely used in the preparation of medicinal ointments and in the manufacture of varnish, and was said to be the best of the different elemi available.

At present, Manila elemi, known locally as salong, saleng or sahong, continues to be used in some areas as poultices or cataplasms. The elemi contains volatile oils, mainly d-limonene, d-phellandrene and various terpenes. Together with the resin fraction, the volatile oils exert a stimulant and warming effect on the skin when the plaster-like poultice is applied. The poultice is therefore useful for rheumatism and muscle pains.

SUGGESTED PREPARATIONS AND USES

Pili Fruit or Seed – Because of its oil content, pili fruits and seeds are laxatives.

Sahing [Alangi, alanki, bakoog (*Ilk.*); belis, pilaway, pisa (Tag.); brea blanca (Span.); Manila Elemi (Eng.)] – The oleo-resin of pili is available in markets, particularly in the Bikol region. This oleoresin can be applied locally to reduce pain in arthritis and rheumatism. It is also a maturative for boils, abscesses and furuncles.

Family **CARICACEAE**

PAPAYA *Carica papaya* L.

Papaya is the souce of the enzyme papain. Papain is a proteolytic enzyme with action similar to pepsin, one of the digestive enzymes found in animals, including man. It is now produced commercially as a meat tenderizer and as a drug.

Among the medicinal actions of papain are:

1) As with pepsin, papain is a digestant. It helps relieve indigestion, particularly when the food material is protein. Papain has advantages over pepsin in that it does not need an acid environment to become active. The laxative action of papaya fruit may be partially due to the presence of papain.

2) In the same way that it dissolves protein in food, papain is a good anthelmintic because it can dissolve the intestinal parasites. It is less effective than ficin (another proteolytic enzyme from isis or *Ficus ulmifolia,* which is discussed on (page 54) but still has its value against roundworms *(Ascaris)* and whipworms *(Trichuris).*

3) Commercial drug preparations of papain are used mainly as an anti-inflammatory. Papain, even in crude form, is useful in wounds and skin ulcers due to its ability to 'clean' wounds by dissolving dead tissue, blood clots, some microorganism and other contaminants. This reduces the inflammation and helps the wounds heal.

Papaya also contains carpain, a glycoside found mainly in the leaves (0.1 to 0.5%). Carpain has a very mild digitalis-like action and may be useful as a cardiac tonic. It has been reported to have antibiotic properties and a recent study reports carpain to have some anti-cancer activity.

Both the fruits and leaves of papaya are good sources of vitamins A and C. The leaves also contain calcium.

SUGGESTED PREPARATIONS AND USES

Fruit – The fruit is a mild laxative.

Latex from Unripe Fruit – Papain is found most abundantly in the latex of the unripe fruit of papaya. Use a clean knife to cut the fruit and collect the latex in clean containers. Use fresh.

a) As a digestant – Use 3-4 teaspoonful of the latex, diluted with water, for indigestion.

b) As a dewormer for roundworms *(Ascaris)* and whipworms *(Trichuris)*, use 2-4 tablespoonfuls (30-60 ml) of the latex, depending on the age and size of the patient. Mix the latex with water (two volumes of water for every one part latex) and a little sugar. Give the mixture early in the morning. The patient should be on an empty stomach. Follow treatment with a purgative such as sodium sulfate two hours after the latex is given.

c) As an anti-inflammatory – Fresh latex can be applied directly on wounds (including those resulting from surgical or dental procedures), allergic reactions and skin ulcers including bedsores. A strip of the fresh fruit can also be used instead of the latex although this might present some problems of sanitation. The use of the fresh fruit was reported in an English hospital, where infections of bedsores were found to be controlled better by papaya fruit than by antibiotics.

PRECAUTIONS: The latex of papaya should not be given to patients with gastric or peptic ulcers because papain can further irritate the ulcers. The latex should not be given simultaneously with anti-coagulant drugs.

The latex can also irritate mucous membranes – patients may complain of itching arund the mouth after taking the latex. Diluting the latex can help reduce the itching. Reactions will vary – some people are more sensitive to the latex than others.

The use of papaya latex as an anthelmintic has been discouraged lately because of reports that some people have allergic reactions caused by intestinal absorption of products formed by the proteolysis of the parasites.

Family COMBRETACEAE

Talisay (*Terminalia catappa* L.) is sometimes used as an anthelmintic although its effectivity has not been evaluated. The bark contains tannin and is astringent. The kernel of talisay contains an oil that is supposed to be as good as almond oil and does not turn rancid on storage.

Niyog-niyugan (*Quisqualis indica* L.) is an effective dewormer and will be discussed here. In Africa, another member of this family, *Combretum mucronatum,* is being used successfully in the treatment of guineaworm *(Dracunculus medinensis).* Other *Combretum* species are used in South-east Asia as anthelmintics.

NIYOG-NIYUGAN (Fig. 19) *Quisqualis indica* L.

Talulong, tartaraok, tartarau *(Ilk.);* **tangolo(n), kasumbal** *(Bik.);* **piñon (es), balitadham, bonor** *Bis.)*

Niyog-niyugan is used widely in folk medicine as an anthelmintic. Its use has been reported in different Asian countries.

Studies on the seed have proven it to be anthelmintic, with the action being one of paralysis on the worms. Clinical trials using niyog-niyogan have been conducted by the Medicinal Plants Project of the Bicol River Basin Council and a published report indicated good results in the use of the seeds, comparable with commercial piperazine preparations.

Niyog-niyugan's active anthelmintic principle has been identified as an amino acid. A Vietnamese study found the seeds to be 10% tannin and 22% fixed oil. Local studies also reported the presence of oil, which is a purgative. A gum extracted from the seeds gave reactions "suggestive of alkaloids."

Fig. 19 – Niyog-niyugan *(Quisqualis indica* L.), found wild in thickets and river banks but also sometimes cultivated for its fragrant flowers which change from white to pink to red as it ages. The fruits are 2.5 to 3 cm long and five-angled (shaped like balimbing).

SUGGESTED PREPARATIONS AND USES

Niyog-niyugan Seeds – Collect only ripe fruits (black) and use seeds only from unopened fruits. Different doses have been cited. One Chinese herbal gives the dose as one seed for each year of patient's age, with the total daily dosage not exceeding 20 seeds. The seeds are taken daily, early in the morning and on an empty stomach, for three successive days, followed by a three day rest period and another treatment for heavy infections. The official *Chinese Pharmacopoeia* lists the dose as 6-9 gm (about 10-15 seeds).

Local researchers tend to be more conservative in the doses. The *Philippine National Formulary* gives the dose as 1-2 seeds but this may be too weak. Researchers at the Philippine General Hospital recommend 8-10 dried seeds.

Niyog-niyugan is effective for roundworms (*Ascaris*) and hookworms (*Ancylostoma*). For pinworms (*Enterobius*), one Chinese herbal suggests using 1 gm of the powdered seeds for each year of the child's age, with the dose not to exceed 4 gm. daily. The powder is taken three times a day for six days.

PRECAUTIONS: The seeds should be chewed well. It has a coconut-like taste which is acceptable to children. Hiccoughs are an occasional side-effect, for which sugar or candy can be given as antidote. The hiccoughs are believed to be due to a metabolic reaction in the breakdown of the seeds' constituents. Researchers at the Philippine General Hospital suggest the use of dried nuts because fresh nuts are associated with more hiccoughs.

Diarrhea is an infrequent side effect.

For some unexplained reason, the *Chinese Pharmacopoeia* says that niyog-niyugan seeds should never be taken with hot tea.

Despite the problem of hicoughs, niyog-niyugan is still considered one of the safest herbal anthelmintics.

NOTE: Niyog-niyugan seeds can be found only from June to August. The seeds do not appear simultaneously with the flowers, which is why the plant is often said to be hard to find. Efforts should be made to collect the seeds, and to store them after drying.

Family COMPOSITAE

This family is one of the largest in the plant kingdom and includes many familiar weeds as well as several species cultivated for their beautiful flowers.

A number of plants in this family are used medicinally, including common weeds. Their chemical constituents are as diverse as their morphological characteristics but a large number of the plants seem to find common use as vulneraries (drugs to speed healing of wounds). They also seem popular as anti-inflammatory drugs. A local research team is presently screening plants from this family for certain types of lactones which have potential anti-tumor activity, following reports from the West that this family had yielded a significant number of these anti-tumor lactones.

DAMONG MARIA (Fig. 20) *Artemisia vulgaris* L.

Arbaaka *(Ilk.)*; gilbas *(Bis.)*

Damong maria is one of the most commonly used medicinal plants in the Philippines and is noted especially as an emmenagogue, expectorant and anti-spasmodic.

The leaves, stems and roots contain an alkaloid (vulgarin) and volatile oil, mainly cineol, thujone and a little camphor. A bitter principle (artemisin), saponins and tannin have also been reported present. The Russians report iodine in the leaves and vitamin C in the leaves and roots while the Chinese report the presence of vitamins A, B and C.

Local researchers using plant extracts in experimental animals found damong maria to stimulate respiratory secretions, inhibit gastro-intestinal movements and increase the force and frequency of contractions in the uterus. Antibiotic activity against *Micrococcus aureus* has also been reported.

Dried twigs of damong maria have been observed to be good insect repellants when burned. Damong maria is also known for its use in moxibustion, a traditional form of treatment used in Eastern Asian countries (China, Japan and Korea), together with accupuncture.

Other species of *Artemisia,* some of which are found in the colder areas of the Philippines, contain the alkaloid santonin, which is anthelmintic.

SUGGESTED PREPARATIONS AND USES

Decoction of Damong Maria Leaves – Fresh (3-6 gm) or dried (9-12 gm) leaves can be used. (One tablespoonful of fresh leaves, crushed, is about 3 gm. For crushed dried leaves, one tablespoonful is 1.5 to 2 gm.) The decoction can be used for stomach ache, as an expectorant and as a uterine tonic (for excessive fetal activity and post-partum abdominal cramps).

Fresh Juice from Damong Maria – Use 1 teaspoonful of juice extracted from fresh leaves for functional dysmenorrhea. The decoction given above can also be used for dysmenorrhea although the fresh juice is more effective.

External Uses – The fresh leaves are used as a poultice for headaches. A tincture prepared with the leaves can be used for body bruises and sprains.

Dried Damong Maria Twigs – The dried twigs or branches of damong maria can be twisted and formed into a rope which is burned as an insecticide.

PRECAUTIONS: Avoid prolonged use of decoctions and the concentrated juice. Damong maria is contra-indicated in patients with gastric and duodenal ulcers, acute gastrointestinal inflammations and typhoid fever.

MANSANILYA (Fig. 21) *Chrysanthemum indicum* L.

Mansanilya is used locally as a carminative. The flowering heads, which contain much of the volatile oil, are used as an infusion. Glycosides have been isolated from the flowers. The Chinese report the presence of vitamins A and B_1. Lactones have also been identified.

Mansanilya has been found to have antibacterial and hypotensive properties. It is also much valued by the Chinese as an anti-inflammatory.

Other species of *Chrysanthemum* have been particularly useful as a source of pyrethrin, an insecticide of low toxicity.

SUGGESTED PREPARATIONS AND USES:

Mansanilya Decoction or Tea – A decoction or infusion (tea) can be prepared using 9-18 gm dried or 30 gm fresh material. Either the whole plant or just the flowers can be used. The preparation is given as an anti-inflammatory for acute lymphageitis, whooping cough, bronchitis, rheumatism, arthritis, mastitis and for swellings, boils and abscesses. For hypertension, a tea prepared from the flowers is preferable. The tea can also be used as a carminative.

Decoction of Mansanilya Yerba Buena and Moras – A decoction using 9 gm dried mansanilya (flowers or whole plant), 9 gm moras or mulberry (page 54) and 5 gm yerba buena (page 41) is used for serious colds and headaches, again as an anti-inflammatory. The decoction using mansanilya alone can also be used although the combination with other plants is said to be more effective.

Aceite Mansanilya – Warm coconut oil and then add the flower heads of mansanilya. Heat for a few minutes and then let it cool down for 30 minutes. Remove the plant material. The oil can be applied on the abdomen for gas pains.

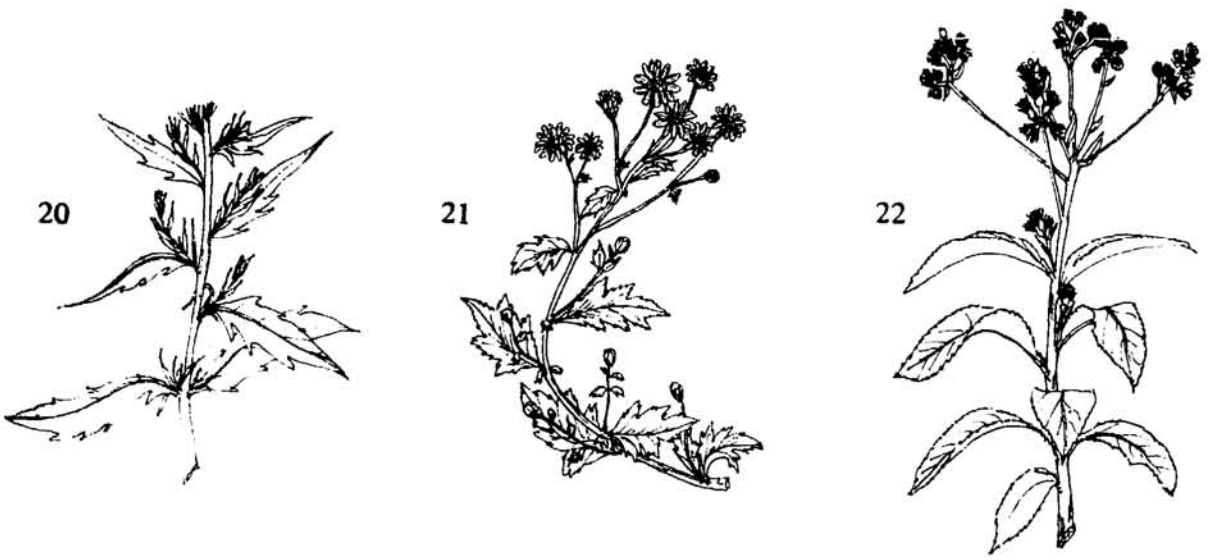

Fig. 20 – Damong maria [*Artemisia vulgaris* L.] is a herb with lobed leaves 5-14 cm long. Flowers occasionally appear and occur in large numbers on long spikes.

21 – Mansanilya [*Chrysanthemum indicum* L.] is a herb with leaves similar to damong maria. It has small yellow flowers.

22 – Sambong [*Blumea balsamifera* (L.) DC] is a wild growing shrub that can reach up to 3 m. Its leaves are hairy, 7-20 cm long. Yellow flowers appear from February to April.

SAMBONG (Fig. 22) *Blumea balsamifera* (L.) DC

Sob (o) sob *(Ilk.)*; alibum, dalapot, (e) n, (h)a(m)libon, lakadbulan, gitin-gitin *(Bis.)*

Sambong is a popular medicinal plant, used particularly as an expectorant, antispasmodic and emmenagogue. It contains volatile oil (0.1 to 0.4% in leaves and stems) consisting mainly of 1-camphor and 1-borneol with trace amounts of limonene and sesquiterpenes.

Like other plants with volatile oils, sambong acts on the bronchioles, particularly in stimulating secretions. However, recent studies in the Philippines suggest that sambong may also have an effect on the central nervous system. Its use for coughing may therefore be antitussive (frequency of cough is reduced). In fact, prolonged use of sambong often results in constipation, again perhaps because of its central effect. Sambong's action on the central nervous system has stimulated interest in its possible use as an antipyretic.

SUGGESTED PREPARATIONS AND USES

Decoction of Sambong Leaves – A decoction is prepared from 6-9 gm dried or 12-15 gm fresh leaves. (With larger leaves, only two or three are enough.) The decoction is used as an expectorant, emmenagogue, carminative and febrifuge.

Inhalation – Sambong leaves can be used alone or in combination with other plants (e.g. alagaw – page 72, suob-kabayo – page 41, talumpunay – page 67) for steam inhalation in bronchitis and asthma.

External Uses – Crushed sambong leaves, mixed with a little coconut oil, can be applied on the abdomen of children suffering from gas pains.

The same mixture can be applied for rheumatism, arthritis, headache and chest pains. Do not apply on open wounds.

DILA-DILA (Fig. 23) *Elephantopus scaber* L.
Kabkabron (Ilk.); tabatabakohan (Tag.)

Dila-dila is sometimes used locally as a diuretic, febrifuge and emollient. Similar uses have been reported in other parts of the world. The plant contains glucosides and alkaloids. It has been found to have significant anti-inflammatory, antibacterial and diuretic action.

SUGGESTED PREPARATIONS AND USES

Decoction of Dila-dila – The whole plant is used, 15-30 gm. if dried and 60-120 gm. if fresh. The decoction is taken for various acute conditions such as bronchitis, pneumonia, hepatitis and dysentery. As a diuretic, it can be used for edema and nephritis.

PRECAUTIONS: The oral preparation can cause gastric irritation.

HARANGAN (Fig. 24) *Centipeda minima* (L.)
Pisik (*Bis.*); sneeze weed (*Eng.*) A. Br. & Aschers

As its English name suggests, harangan's leaves can provoke sneezing (sternutatory). It is used for that purpose in the Philippines and in other Asian countries.

Chemical constituents that have been reported present in the plant include volatile oil, an alkaloid, a glucoside, traces of saponin and various sterols. Extracts have been tested and found to have smooth muscle relaxant properties.

SUGGESTED PREPARATIONS AND USES

Harangan Leaves – Harangan leaves are used fresh (pressed between the fingers and inhaled) or dried (combined with yerba buena – [page 41] – vaseline ointment, which is then applied to the nose) The leaves provoke sneezing and is useful in clearing up clogged respiratory passages in colds, rhinitis and similar afflictions.

Decoction of Harangan – The entire plant can be collected and used in decoction. Use 6-9 gm. dried material. The decoction is used for rhinitis, headaches (due to colds), whooping cough and chronic bronchitis.

PRECAUTIONS: The decoction can cause gastric irritation and should be used carefully by people with digestive disorders.

TAGULINAW (Fig. 25) *Emilia sonchifolia* (L.) DC
Lamlampaka (*Ilk.*)

Tagulinaw is a popular folk remedy for fever. It is also used as a styptic and vulnerary. Despite its popularity in the Philippines, there are no available reports or studies on its chemical constituents or pharmacology.

In China, the plant is classified as an "anti-inflammatory, antipyretic and diuretic."

SUGGESTED PREPARATIONS AND USES

Decoction of Tagulinaw – The whole plant is used, 6-15 gm. dried and 15-30 gn. fresh. It is used for enteritis, dysentery, and infections of the respiratory system. As a diuretic, it is used for infections of the urinary tract.

TINTA-TINTAHAN (Fig. 26) *Eclipta alba* (L.) Hassk.
Higus-manok (*Tag.*) Syn. *Eclipta prostrata* L.

This is a common garden weed which leaves a black stain when the fresh leaves are crushed. It is used in folk medicine for wounds and for treating hepatitis.

The plant contains tannin and a bitter principle. Lactones have been found and extracts of the plant show estrogenic activity due to the lactones. The plant extracts also show smooth muscle relaxant properties.

In Vietnam, the plant was widely used during the war as an antiseptic and hemostatic.

SUGGESTED PREPARATIONS AND USES

Decoction of Tinta-tintahan – The entire plant is used, 6-12 gm. of the dried material. (e.g. hematuria, bloody stool, hemoptysis, uterine bleeding).

Externally, a decoction of the fresh material can be used for wounds as a styptic and vulnerary. The decoction is also cited as an effective cure for "rice-paddy dermatitis," a condition common among farmers.

OTHER MEDICINAL PLANTS FROM THE COMPOSITAE FAMILY

Agas-moro [*Vernonia cinerea* (L.) Less var. *parviflora* (Bl.) DC] is a very common weed found throughout the country. In folk medicine, it is often used for wounds. The Chinese classify the plant as "cooling, liver-cleaning and fever-retarding." A decoction of the entire plant (15-30 gm.) has been cited for use in colds, fever, cough, hepatitis and mastitis.

Ahengho [*Crossostephium chinese* (L.) Merr] – Ahengho is used locally as a carminative and emmenagogue (infusion of leaves). In experimental animals, it stimulates the nervous system and in toxic doses, causes muscular contractions. Its value as an emmenagogue has been questioned and its continuous use is not advisable.

Boto-botonisan [*Sphaeranthus africanus* L.]– Boto-botonisan has been found to have anthelmintic action on roundworms *(Ascaris)* and has been used for this purpose (2-4 gm powdered leaves with sugar). The leaves contain volatile oil.

Bulak-manok [*Ageratum conyzoides* L.] – The juice of the fresh leaves of bulak-manok is used alone or mixed with salt or oil as a vulnerary while a decoction of the plant is used for stomach trouble. The plant contains very small amounts of volatile oil, coumarin and traces of alkaloid. The coumarin might be responsible for the stimulation of gastric mucosa. Crude extracts from the leaves have been found to be active against *Staphylococcus aureus*. In China, a decoction (15-30 gm dried material) is used for colds and fevers while the squeezed juice from fresh material is used for otitis media, bleeding, boils and carbuncles.

Burburtak [*Bidens pilosa* L. Fig. 27] has interested CBHP workers in the mountain provinces because of the observation that in areas where burburtak is eaten as a vegetable, the incidence of goiter is muc lower. However, the Food and Nutrition Research Institute reports that the iodine levels of burburtak were high only in some plant samples from the mountain provinces while burburtak from Manila contained very little iodine. It is possible that the soil may be a factor.

Hagonoy [*Wedelia biflora* (L.) DC] is a so a common weed in the Philippines that farmers complain about controlling is growth. Yet, it is a very popular folk remedy for wounds. The roots are also used traditionally as emmenagogues and diuretics.

There are no available local studies on the plant. However, it is widely used among community-based health programs because of favorable experiences with the plant as a vulnerary. The

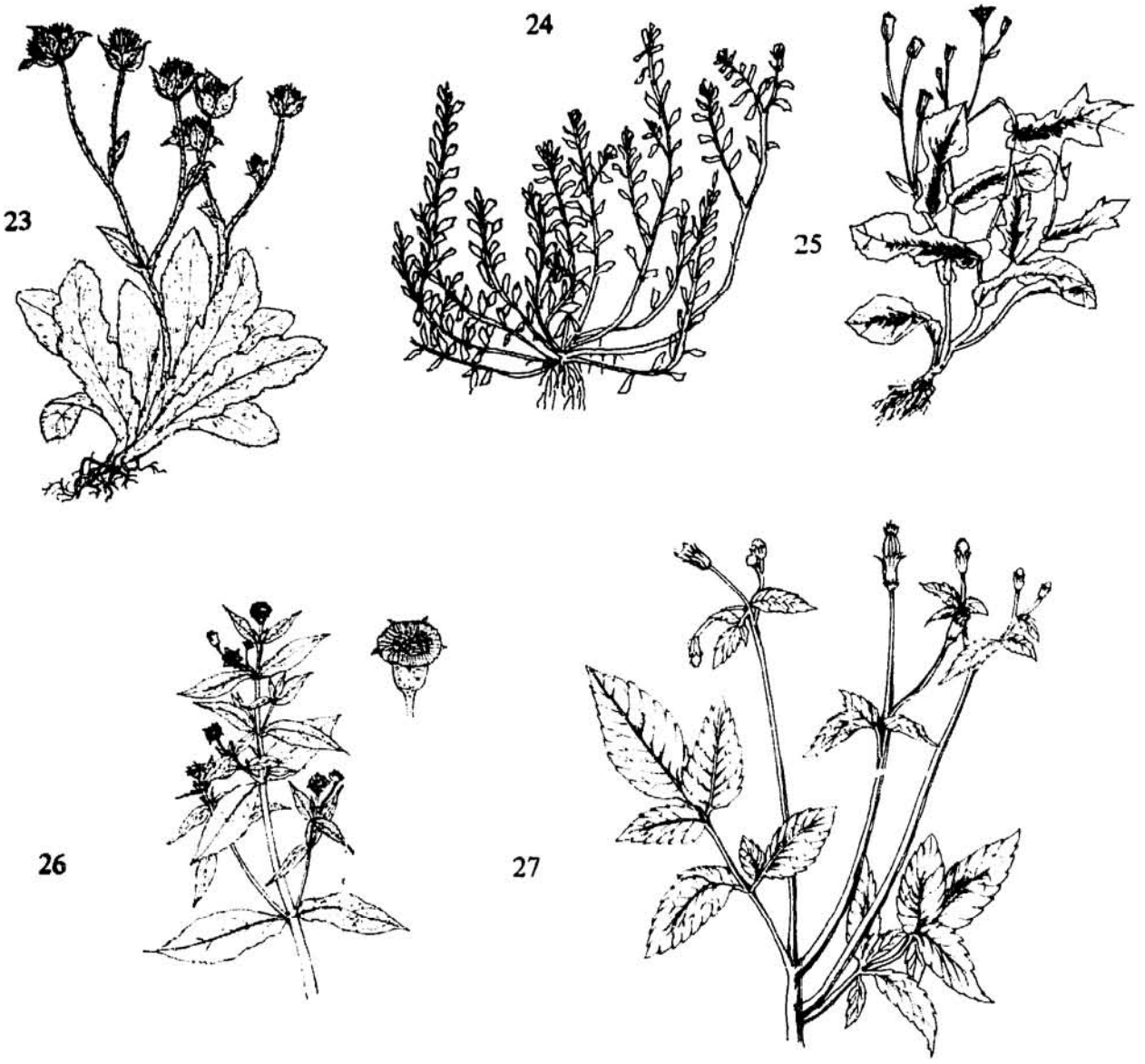

Fig. 23 – Dila-dila [*Elephantopus scaber* L.] is a wild herb with leaves arranged in a rosette near the ground. Its flowers are purple and are borne in clusters at the tip of branches.

24 – Harangan [*Centipeda minima* (L.) A. Br. & Aschers] is a small herb with many tiny leaves (1 cm long) and tiny red stalkless flowers (rounded).

25 – Tagulinaw [*Emilia sonchifolia* (L.) DC] is a wild herb that grows 10-40 cm high with stalkless leaves that are lobed. Its flowers have long stalks and are purple.

26 – Tinta-tintahan [*Eclipta alba* (L.) Hassk.] is a hairy herb with small black fruits.

27 – Burburtak [*Bidens pilosa* L.] is a small hairy herb with disk-flowers that are brown or yellowish.

plant has become so popular it is used as an antiseptic and styptic in minor surgery.

The Chinese have found lactones in various *Wedelia* spp.

Wedelia chinensis (Osb.) Merr. (hagonoy-tsina) is official in the *Chinese Pharmacopoeia* and is prescribed mainly for pharyngitis (a decoction of the entire plant, 15-45 gm. for dried material). Another species, *W. prostrata* Hemsl. has been used, with good results, for diphtheria.

Family CONVULVULACEAE

Kangkong[1] and kamote[2] are often taken for granted but both have definite nutritional value, particularly as sources of calcium, phosphorus, iron and vitamin C. Of the two, kamote (tops) is a better source of the minerals and vitamin C but kangkong is more valuable as a source of iodine.

Both kangkong and kamote are diuretics because of their potassium content.

Tunkin[3], a less known member of this family, has been found to have antibacterial activity.

Morning glory[4], sometimes cultivated as an ornamental, has seeds which contain aklaloids that are hallucinogenic.

[1] *Ipomea aquatica* Forsk.

[2] *Ipomea batatas* (L.) Poir.

[3] *Ipomea muricatum* (L.) Jacq.

[4] *Rivea corymbosa* (L.) Hall f.

Family CRASSULACEAE

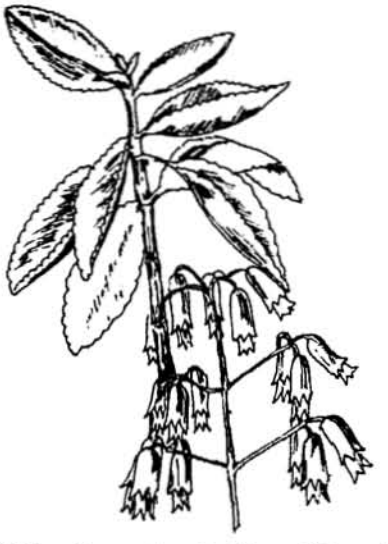

Fig. 28] – Kataka-taka [*Kalanchoe pinnata* (Lam.) Pers.] The leaves can grow into a new plant after falling off. Bell-shaped flowers are sometimes produced.

Katakataka [*Kalanchoe pinnata* (Lam.) Pers. – Fig. 22] is a popular medicinal plant in Asia. Its leaves are used externally for wounds, boils and headache. Tannin, sulfur, calcium oxalate and formic acid have been reported to be present in the leaves and stems.

Family CRUCIFERAE

Several familiar cultivated species belong to this family – mustasa[1], repolyo[2], labanos[3] and petsay[4]. Many plants in this family contain sulphur compounds called isothiocyanates, which give a pungent and biting odor.

[1] ***Brassica integrifolia*** L.

[2] ***Brassica oleracea var. capitata*** L.

[3] ***Raphanus sativus*** L.

[4] ***Brassica chinensis*** L.

Mustasa or mustard contains these isothiocyanates. The isothiocyanates make mustard a powerful irritant and rubefacient useful for body pains. Commercial medicinal plasters often use mustard as one of the ingredients. Used excessively, mustard can cause blisters. Taken in large amounts by mouth, mustard can cause vomiting. However, mustard leaves are eaten as vegetables and are good sources of calcium. The mustard used as flavoring and as medicine comes from the seeds.

Repolyo or cabbage is a good source of vitamin C and various minerals. It also contains high levels of the amino acid glutamine, which has been called "vitamin U" because of its stimulation of mucin production, an action said to be useful for the treatment of gastric and peptic ulcers. An American report in 1961 cited the use of cabbage juice (450 ml daily) in the treatment of ulcers. The Russians report that 2-3 g of dried cabbage juice, taken daily, was useful in the treatment of peptic ulcers, chronic gastritis and cholangiohepatitis.

The medicinal use of the crucifers is limited because they contain certain substances (goitrin, thiocyanate, etc.) which inhibit thyroid activity and increse the iodine requirement in the body. The substances are called "goitregenic" because they increase susceptibility of human beings (as well as livestock) to goiter.

LABANOS *Raphanus sativus* L.
Radish (*Eng.*)

The leaves, roots, flowers and seeds of labanos have been popular remedies for many ailments such as arthritis, nephritis, indigestion and female disorders. Experimentally, plant extracts have been found to be diuretic. There have also been reports of anti-tumor, antibacterial, antifungal and antiviral properties. The antibiotic principle is believed to be a sulfur-containing compound called raphanin. Raphanin is found in the seeds, together with fatty oil.

SUGGESTED PREPARATIONS AND USES

Decoction of Labanos Seeds – Drieds seeds are used, 4.5 to 9 gm. The decoction can be used for indigestion, dyspnea, coughing and, as a diuretic, for edema, and ascites.

Family CUCURBITACEAE

This family of climbers includes a number of common fruits and vegetables which are also used medicinally, mainly as diuretics, anthelmintics and cough remedies.

In many cases, the anthelmintic and expectorant properties of the roots of cucurbits are due to elaterin, which is a drastic purgative and emetic (causing vomiting).

The cucurbits are also characterized by the presence of bitter substance called cucurbitacins, which are highest in the fruits and roots. The cucurbitacins are triterpenoids which may occur in the free state as glycosides. They have a degree of toxicity and some have been found to have antitumor activity.

Despite the presence of these toxic substance, many cucurbits do have medicinal value:

AMPALAYA (Fig. 29) *Momordica charantia* L.
Amargoso (*Sp.*), palia or paria (many dialects), bitter gourd (*Engl.*)

Ampalaya is found throughout the Philippines, both in wild and cultivated forms. The fruit – wild or cultivated – is edible but bitter. Both the fruits and leaves are good sources of vitamin C. The leaves also contain iron, folic acid and calcium.

Many medicinal uses have been attributed to ampalaya. All parts of the plant have been reported to be in use for ailments ranging from coughing to wounds to diabetes. In the Philippines, ampalaya is used mainly for coughing and for wounds although it is also cited at times for dysentery.

A local stuoy has found extracts of ampalaya leaves to be antibacterial particularly against gram-positive bacteria. The antibacterial action was speculated to be an "alkaloidal principle." Chemicals such as glycosides (momordicin) and alkaloids have been reported to be present.

SUGGESTED PREPARATIONS AND USES

Ampalaya Leaves – Fresh ampalaya leaves, or its extract, can be used for wounds. It can be tried also for coughing and diarrhea. It is also a good nutritive.

The leaves can be warmed with coconut oil. Use the oil for scabies.

A teaspoonful of juice from the leaves with one teaspoon of juice from coconut meat is purgative.

29

30

Fig. 29 – Ampalaya [*Momorcadica charantia* L.]
Fig. 30 – Kalabasa [*Cucurbita maxima* Duch.]

KALABASA (Fig. 30) *Cucurbita maxima* Duch.

Different varieties of squash are used as anthelmintics. In temperate countries, *C. moschata* Duch, and *C. pepo* L. are the species used while in tropical countries, including those in South America, *C. maxima* Duch. is the one used.

The seeds of the members of this genus are specifically used for tapeworms. The taenicidal activity was originally thought to be purely mechanical while others attribute the activity to cucurbitacin. More recently, however, researchers identified, in the seeds of *C. moschata* Duch., the presence of an amino acid whose action is similar to kainic and domic acids, two chemical constituents found in the anthelmintic alga *Digenia simplex* (Wulf.) C. Ag. Other researchers isolated an amino acid, cucurbitin, from *C. maxima* seeds and found it to have anthelmintic activity of the same degree with piperazine.

The use of kalabasa seeds is considered safer than using the stems and roots of other cucurbits because the "anthelmintic" principle in the other plants is actually due to the purgative action of the toxic substance elaterin.

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In recent years, Chinese researchers have been studying squash varieties extensively because of cucurbitin's *in vitro* action against *Schistosoma.*

Nutritionally, kalabasa's fruits, as well as flowers and leaves, are good sources of vitamin A and calcium.

SUGGESTED PREPARATIONS AND USES

Emulsion of Kalabasa Seeds – Use 60-100 gm (15-25 tablespoons) of the seeds for tapeworms. Use only fresh seeds and remove the seed coat. The seeds can be taken alone but it would be more acceptable if it is crushed and mixed with sugar water or milk. Give on an empty stomach followed by a purgative after 1 or 2 hours.

Decoction of Betel Nut and Kalabasa Seeds – See page 11.

OTHER MEDICINAL PLANTS FROM CUCURBITACEAE

A number of cucurbits are officially listed in the *Chinese Pharmacopoeia*, mostly as diuretics. These include the rinds of kondol[1] (9-30 gm.)*, pakwan[2] (12-21 gm.) and upo[3] (15-30 gm.)

The seeds of kondol (9-30 gm.) are also listed as a remedy for coughing and for inflammatory conditions. The seeds of melon[4] (9-30 gm.) are cited as a cough remedy and as an anti-inflammatory in appendicitis. Melon's pedicels (stalk of the fruit)) are also listed for food poisoning, epilepsy and excessive phlegm, with a dose of 0.6-1.5 gm. Melon's uses are probably dependent on the presence of elaterin, whose emetic action may help in food poisoning and in bringing out phlegm. However, this is dangerous and the *Chinese Pharmacopoeia* warns against using the melon stalks in deabilitated patients and in people with heart disease.

[1] *Benincasa hispida* (Thunb.) Cogn
[2] *Citrullus vulgaris* Schrad.
[3] *Lagenaria siceraria* (Mol.) Standl.
[4] *Cucumis melo* L.

* All doses mentioned in this section refer to the dried material in decoction.

Family EUPHORBIACEAE

A number of plants from this family are used medicinally for their fixed oils. Examples are lumbang[1], kamaisa[2], tubang-bakod[3] and tangan-tangan or castor[4]. The fixed oils are found in the seeds of these plants. They are all strong purgatives and contain toxalbumins. The safest to use as a purgative is tangan-tangan, which will be discussed below.

Tubang-bakod (Fig. 31) and mana[5] may have some value in the treatment of skin diseases. The leaves and stems of both species are efficient insecticides and are used externallly for skin ailments such as scabies. The leaves contain abundant saponin, which may be responsible for the insecticidal activity. It may be worthwhile investigating the plants for anti-fungal activity. The two plants also contain tannin and are used for wounds.

The leaves of tubang-bakod are also used as a poultice (warmed with oil) for rheumatism, arthritis and muscle pains.

Many plants from the *Euphorbiaceae* are used for their latex. With certain plants such as soro-soro[6] (Fig. 32) and suerda[7], the use of the latex should be avoided as they have been found to be cocarcinogenic. Alone, they do not cause cancer but a user exposed to other carcinogenic substances becomes more susceptible to cancer. Moreover, the latex is very irritating to the skin, often causing blisters. However, the juice of heated soro-soro or suerda leaves are very popular folk remedies for ear infections.

Banato[8] is the source of kamala, a powder obtained from the glands and hairs (trichomes) covering banato's fruits. Kamala used to be a popular anthelmintic. The anthelmintic properties are due to the presence of rottlerin, berberine and other substances found in the powder. There has been renewed interest in the rottlerin as a possible anti-fertility action. The *Philippine National Formulary* recommends the use of banato for skin fungal infections. The pound leaves or seeds are applied on affected areas.

The common weed sampasampalukan[9] is used locally as a tonic for the stomach, an emmenagogue and a febrifuge. It contains glucosides, saponin and tannin.

Kamoteng-kahoy or cassava[10] is often cultivated for its fleshy, starchy roots. The bitter variety, from which starch is obtained, contains cyanogenetic glucosides and is poisonous if not cooked well. There has also been research going on to investigate the possible relationship of chronic pancreatic disease with cassava consumption in malnourished people. The speculation is that malnourished individuals lack the necessary amino acids which help in the detoxification of hydrocyanic acid.

[1] *Aleurites moluccana* (L.) Willd.
[2] *Croton tiglium* L.
[3] *Jatropha curcas* L.
[4] *Ricinus communis* L.
[5] *Jatropha multifida* L.
[6] *Euphorbia neriifolia* L.
[7] *Euphorbia tirucalli* L.
[8] *Mallotus philippensis* L. *Muell.* – Arg.
[9] *Phyllanthus ninuri* L.
[10] *Manihot esculenta* Crantz.

TANGAN-TANGAN (Fig. 33) *Ricinus communis* L.
Tawa-tawa (*Ilk.*)

Tangan-tangan or castor is cultivated in some areas of the country. Its seeds yield 50-80% fixed oil, consisting mainly of ricinolein, which is broken down in the intestinal tract into glycerin and ricinoleic acid. Ricinoleic acid is a local irritant, acting on the intestinal mucosa and causing catharsis. Unlike many purgatives, castor oil does not cause griping (pain).

The seeds of tangan-tangan also contain ricin, a toxalbumin, and ricinine (ricidine), a toxic alkaloid. Thus, the raw seeds should never be taken orally. When extracting castor oil, the seeds are pressed in cold water and the poisonous substances do not pass through.

SUGGESTED PREPARATIONS AND USES

Castor Oil – Commercial preparations of castor oil are available. It is a good purgative to use in food poisoning. The dose is 5-15 ml (1 teaspoon to 1-1/2 tablespoon) in children and 15 ml (1-1/2 tablespoonful) for adults.

External Uses – The crushed seeds applied as a poultice have been used with good results for prolapsed uterus. A suitable amount of crushed seeds is applied in the prolapsed area and the dressing is changed every 24 hours.

The crushed seeds are also applied externally for gunshot wounds, boils and abscesses. The poultice draws out the pus and relieves pain.

Castor Insecticide – Crush leaves of the plant and dilute the extracted juice with water. Use as a spray against flies.

PRECAUTIONS

1. Castor oil should not be given to menstruating and pregnant women. It should not be used in combination with dewormers because it increases the absorption of these drugs and may cause poisoning in the patient. As with other purgatives, castor oil should not be given where appendicitis or intestinal obstruction is suspected.

2. The seeds should never be taken raw. Ricin destroys red blood cells and will cause hemorrhage, edema of the gastro-intestinal tract and degenerative changes in the kidney. External signs

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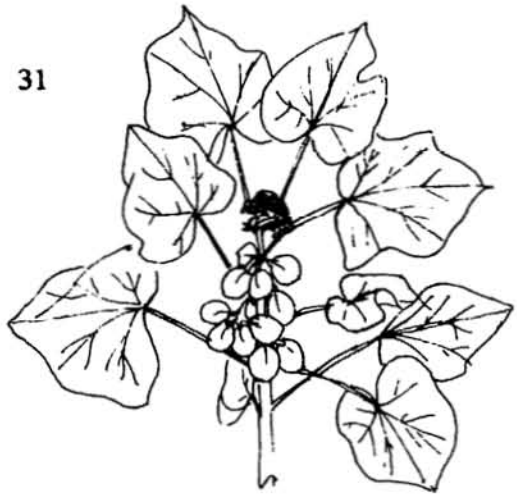

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Fig. 31 – Tubang bakod [*Jatropha curcas* L.]
Fig. 32 – Soro-soro [*Euphorbia neriifolia* L.]
Fig. 33 – Tangan-tangan [*Ricinus communis* L.]
Fig. 34 – Gatas-gatas [*Euphorbia hirta* L.]

of poisoning include headache, persistent vomiting, thirst, stomach ache. In severe poisoning, the pulse becomes small and infrequent. There is cold sweat, icterus (yellowing of mucous membranes) and convulsions.

TREATMENT: Accidental poisoning has been known to occur. Children are particularly susceptible so seeds should be kept out of their reach. Treatment is symptomatic – baking soda (sodium bicarbonate) and replacement of lost fluids.

GATAS-GATAS (Fig. 34) *Euphorbia hirta* L.
Botobotonis (*Tag.*) Syn. *E. pilulifera* L.

This is a very common garden weed which is used in many countries for asthma. The action of the plant is to dilate the bronchioles and ease breathing. However, it is not clear what chemicals are responsible for this action. The plant contains different sterols (euphosterol), glucosides and alkaloids.

In Asian countries, including the Philippines, the plant is also a popular galactagogue (increases milk secretions) – thus the local name "gatas-gatas."

SUGGESTED PREPARATIONS AND USES

Decoction of Gatas-gatas – A decoction is prepared from the whole plant, 15-30 gm. dried. It is cited in the *Chinese Pharmacopoeia* for enteritis and diarrhea although high doses can irritate the gastro-intestinal tract. The decoction can be tried as a galactagogue.

Externally, the decoction is used as a wash for wounds (as a hemostatic) and for skin diseases (as an anti-pruritic). Fresh plants can also be applied directly on the wound.

Inhalation – Dried plants can be burned and used as inhalation for asthma. Or, it can be rolled into a cigarette and smoked. Gatas-gatas can be used alone or in combination with other plants such as sambong (page 28) and talumpunay (page 67).

Family FLACOURTIACEAE

Dudoa [*Hydnocarpus alcalae* C. DC.] has been reported only in the forests of Albay, although it is now cultivated in other areas for research. Its seeds yield oil with chaulmoogric and hydnocarpic acids. Chaulmoogric acid is used for treating leprosy. (At present, the commercial source of chaulmoogric acid is the Burmese *Hydnocarpus kurzii*.)

Another member of this family, pangi [*Pangium edule* Reinw.], is said to contain chaulmoogric acid in its seed oil but this has been disputed. The plant also contains cyanogenetic glucosides and the seeds, fruits, leaves and bark are said to be narcotic.

Family GUTTIFERAE

BITAOG (Fig. 35) *Calophyllum inophyllum* L.
Pamitaogen (*Ilk.*); palo maria (*Tag.*)

Bitaog's kernels contains 70-75% oil. The fixed oil has been found useful as a cicatrizant (stimulating scar formation) in skin ulcers. Externally, it is used for indigestion and colic as well as for rheumatism. The action is analgesic – intramuscular injections of the refined oil have been used to reduce severe pain in leprosy.

SUGGESTED PREPARATIONS AND USES

Bitaog Kernels (Seeds) – Crush the kernels and apply on the abdomen for gas pains, indigestion and colic. It can also be applied on painful joints in rheumatism.

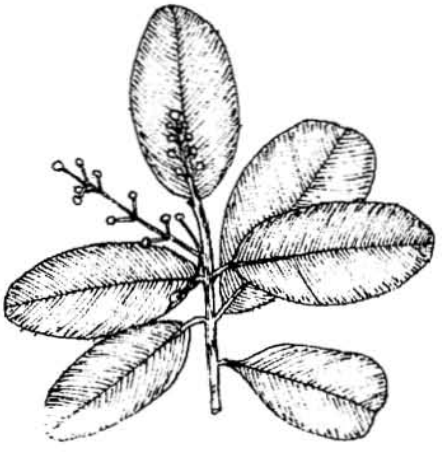


Fig. 35 – Bitaog [*Calophyllum inophyllum* L.] is a large tree up to 20 m high with leathery leaves 9-18 cm long. It has small white flowers and a yellow fruit about 3-4 cm in diameter.

Family LABIATAE

The mint family is characterized by their volatile oils. Although the type of volatile oil may vary, their uses are essentially the same – carminatives, expectorants, mild antiseptics. They are usually taken as decoctions or infusions – 3-6 gm of dried or 6-9 gm of fresh material being the standard dose. Among the commonly used plants from this family are:

BALANOY *Ocimum basilicum* L.
Bidai (*Ilk.*); samilig, samirig (*Bik.*); kalu-ui, kamangi, bouak (*Bis.*); albanaka (*Sp.*); sweet basil (*Eng.*)

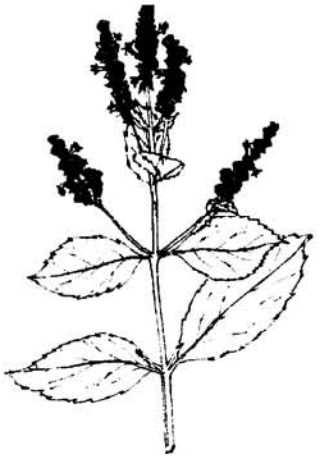
The fresh plant yields 0.42% volatile oil while air-dried specimens yield 1.2% . The main constituents of the oil is methyl-chavicol, which has mild germicidal action. Anethol is present in small amounts.

The whole plant is used in decoction or infusion as carminative and expectorant. It can be used externally as a wash for eczema and dermatitis.

KABLING (Fig. 36) *Pogostemon cablin* Benth.
Kadlum (*Bis.*)

Kabling is the source of patchouli oil. Its leaves are 6-10% volatile oil (cadinene, coerulein, benzaldehyde, eugenol).

Kabling is used mainly as a counter-irritant – the leaves are applied locally for arthritis and rheumatism.



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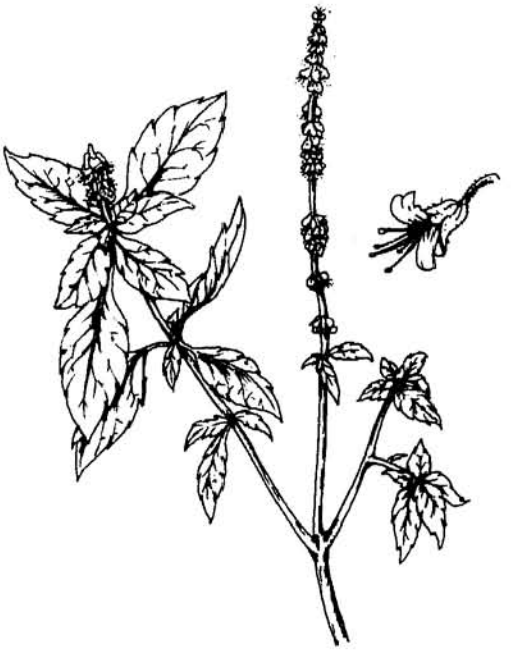

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Fig. 36 – Kabling [*Pogostemon cablin* Benth.] grows to a height of about 1 m. It has pink-purple flowers borne on long spikes.

Fig. 37 – Sulasi [*Ocimum sanctum* L.] is a herb that can grow up to a height of 1 m. with small leaves and flowers borne on racemes. It looks very similar to balanoy [*Ocimum basilicum* L.] but has a longer pedicel (flower stalk).

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Fig. 38 – Suob-kabayo [*Hyptis suavolens* Poir.] is a common weed with tiny blue flowers. It grows to a height of 2 m.

Fig. 39 – Yerba buena [*Mentha arvensis* L.] is a strongly aromatic wild herb with oblong leaves.

MAYANA *Coleus scutellarioides* (L.) Benth.
Daponaya, lapunaya (*Bis.*) Syn. *Coleus blumei* Benth.

Mayana is a common garden ornamental. Its leaves are used externally for bruises, headaches and for gas pains.

OREGANO *Coleus amboinicus Lour.*
Suganda *(Sp.)*

The volatile oil (0.05%) in the leaves) is mainly cavacrol. Glucosides are present in the leaves and stem. Oregano is used as a carminative and expectorant. Its leaves are applied on insect bites and stings. It is also a popular poultice for headaches.

ROMERO *Rosmarinus officinalis* L.

Romero contains volatile oil composed of pinene, cineol, borneol, camphene and rosmarin. A decoction of the plant is used as a diuretic and carminative. The steam of a decoction of the plant is inhaled for coughing. Externally, the plant decoction is used for baths and for rheumatism.

SULASI (Fig. 37) *Ocimum sanctum L.*
Biday *(Ilk.);* kamangkau *(Bik.)* kamangi, katigaw, kolokoko *(Bis.);* albahaka *(Sp.);* sacred basil *(Eng.)*

Note: Because of their close resemblance, the names of balanoy and sulasi are often the same in local dialects.

Sulasi is a sacred plant in India, with many uses. Its leaves are 0.6% volatile oil, mainly methyl-chaviocol, cineol and linalool. Alkaloids are also said to be present.

The whole plant is used as a decoction or infusion as carminative and expectorant. It is also widely used for aromatic baths in fever. Externally, the juice of the leaves is used for insect bites and ringworm. The chavicol content also makes it a good mouth wash for toothache.

The leaves are used as insect repellants.

SUOB-KABAYO (Fig. 38) *Hyptis suavolens* Poir.
Bangbangsit, litalit *(Ilk);* amotan, kolongkogong *(Bik.);* loko-loko, pilodo *(Bis.)*

The fresh leaves of suob-kabayo are 0.05% volatile oil, mainly menthol. Alkaloids, tannin and saponins are present in the plant. The infusion or decoction is used as carminative, expectorant and skin wash.

YERBA BUENA (Fig. 39) *Mentha arvensis* L. Opiz

Yerba buena is probably the most popular member of this family. Its leaves contain 0.8% volatile oil, mainly pulgenone, piperitone and limonene. A decoction of the leaves is used as expectorant, carminative and externally, as a skin wash for itchiness and insect bites. It is also widely used for baths in fevers.

An enema using 7 tablespoonfuls of the crushed fresh plant boiled in a liter of water for five minutes has also been suggested for pinworm *(Enterobius)* infections.

CONTRAINDICATIONS: Mothers who are breast-feeding should not use yerba buena because lactation is reduced.

NOTE: As a general rule, avoid prolonged use of medicinal plants with volatile oils. Also avoid using these plants in children below 3 years of age as well as weak children, irregardless of their age.

OTHER MEDICINAL PLANTS FROM LABIATAE: Other mints used locally include pansi-pansi[1], salita[2], guma-guma[3]. They all contain volatile oil. Another member, buntot-pusa[4], contains volatile oil and alkaloids. Buntot-pusa is a diuretic.

[1] *Leucas aspera* Willd.) Spreng.
[2] *Leucas lavandulifolia* Sm.
[3] *Leucas zeylanica* (L.) R. Br.
[4] *Orthosiphon aristatus* (B_1.) Miq.

Family LAURACEAE

This is a family of aromatic trees and shrubs.

KANELA *Cinnamomum verum* J.S. Presl
KALINGAG (Fig. 40) *C. mercadoi Vidal*
KAMI *C. burmanii Bl.*

Cinnamon is obtained from the bark of these trees (kanela being the usual commercial source). Volatile oil is found in the bark and in the leaves. The volatile oil is mainly cinnamaldehyde (except in kalingag, where the oil is mainly safrol). Among the volatile oils, cinnamon has one of the strongest germicidal properties. Japanese researchers found cinnamaldehyde to be antispasmodic. Its therapeutic applications are mainly for digestive disorders. Kalingag has also been reported to be used locally as a remedy for headaches and rheumatism.

SUGGESTED PREPARATION AND USES

Powdered Bark – As one of the "warmest" drugs, cinnamon is used traditionally for "cold types"of diarrhea, chills and coughing. Use 1-3 gm. of the dried powdered bark in decoction.

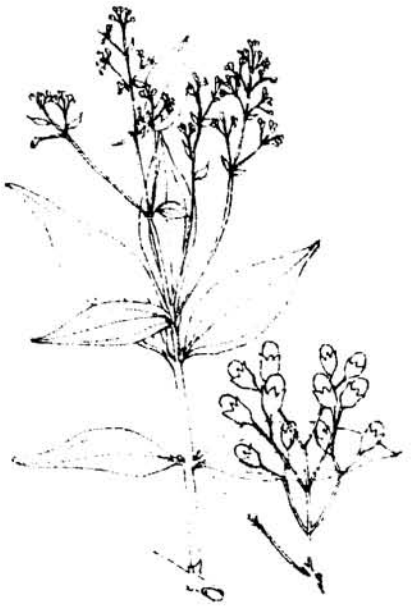

Fig. 40 – Kalingag [*Cinnamomum mercadoi* Vidal] is a small tree with a thick aromatic bark. Its long leaves have three nerves and its fruits are ellipsoid, about 2 cm long.

ABUKADO *Persea americana* Mill.

The chemical composition of abukado (fruit) is markedly different from other edible fruits. Its carbohydrate content is low compared with other fruits and it contains an unusual sugar, d-manno-heptulose. The protein content (1% by weight for locally available fruits) is high for fruits and when it comes to fat, abukado has the highest level among local fruits (5.8 to 7.6%). Abukado also has high calories – 800 to 1000 for each kilo.

The fatty acids in abukado are mainly linoleic and palmitoleic and substitution of 1/2 of dietary fat with abukado fruit has been found to bring down serum cholesterol levels because the fats in abukado are unsaturated. Abukado pulp is considered a good demulcent and emollient mainly because of the fatty oil. Abukado oil is said to be second only to lanolin in emollient quality and, unlike lanolin, produces no allergic reactions. Extracts of the fruits and seeds have been reported to exhibit anti-bacterial activity against Gram positive and Gram negative bacteria. The anti-bacterial activity is attributed to unsaturated heptade-catriols and acetate esters in the oil.

Among the fruits, abukado has one of the highest levels of the B-complex vitamins particularly niacin (nicotinic acid), pyridoxine and pantothenic acid. It is also high in phosphate, iron, potassium and a number of trace minerals. In experimental studies, abukado added to iron-free diets was able to stimulate hemoglobin formation in anemic rats.

SUGGESTED PREPARATION AND USES

Abukado Fruit – The use of abukado in anemia and nutritional deficiencies should be explored further. The pulp can be used on wounds and various skin irritations as an emollient.

Abukado Leaves – The leaves are astringent because of the tannin content.

Abukado Seeds and Bark – The pulverized seeds and bark of abukado can be mixed with oil and applied as a counterirritant for rheumatism and neuralgia. Apply on painful areas.

ABK Decoction – This is a common anti-diarrheal preparation used among community-based programs. Three leaves of each of the following plants are used: abukado, bayabas (page 55) and kaimito (page 64). The leaves are boiled in two cups of water until it becomes reduced by one half.

The "dose" varies with different programs – some use up to seven leaves of each plant. The active principle in all three plants is tannin. Some programs add duhat (page 56) leaves to make an ABKD Decoction.

Family LEGUMINOSAE

The legume family is a very large one, with about 300 species in the Philippines. They are of particular interest because among the plants, they are the best sources of protein. The seeds are particularly rich in protein while the pods provide bulk and vitamins. Recently, there have been efforts to extract protein from the leaves. The legumes are also particularly easy to grow because they can utilize free nitrogen, making it less necessary to use nitrogenous fertilizers. Their nitrogen-fixing properties also enrich the nitrogen in the soil for the use of succeeding crops.

Among the nutritionally important legumes are mani or peanut[1], munggo[2], utaw or soybean[3], kadios[4], bataw[5], patani[6], sigadilyas[7], bitswelas[8], katuray[9], sitsaro[10] and sitaw[11].

Quite a number of legumes are also of medicinal value. A few of the more common ones will be discussed below.

[1] *Arachis hypogaea* L.
[2] *Phaseolus radiatus* L.
[3] *Glycine max* (L.) Merr.
[4] *Cajanus cajan* (L.) Millsp.
[5] *Dolichos lablab* L.
[6] *Phaseolus lunatus* L.
[7] *Psophocarpus tetragonolobus* (L.) DC
[8] *Phaseolus vulgaris* L.
[9] *Sesbania grandiflora* (L.) Pers.
[10] *Pisum sativum* L.
[11] *Vigna sesquipedalis* Fruw.

AKAPULKO (Fig. 41) — *Cassia alata* L.

Andadasi (-a-adadakkel or -ng-bugbugtong) (*Ilk.*); kasitas, sunting, palo-china (*Bis.*)

Akapulko is also called "ringworm bush" and is one of the most popular traditional remedies for skin diseases, particularly "ap-ap" *(tinea flava)* and ringworm.

Like the other *Cassia* species, some of which will be discussed later in this section, akapulko contains anthraquinone glycosides, the most important of which are chrysophanic acid (chrysophanol), rhein and aloe-emodin heterosides. Chrysophanol and rhein are found mainly in the leaflets, stem, stem bark and roots. Laboratory studies have established that these two substances have significant anti-bacterial and anti-fungal properties. Under laboratory conditions, the substances have been found to inhibit the growth of *Staphylococcus aureus, Bacillus subtilis, Mycobacterium phlei, Brucella* and *Candida.*

Aloe and emodin (which have been discussed in connection with sabila (page 7) are found mainly in the pods and seeds of akapulko. They are both powerful cathartics. Emodin also has antibacterial properties. Akapulko, however, is not usually employed as a cathartic.

SUGGESTED PREPARATION AND USES

The traditional method of using akapulko – applying the juice of the leaves directly on the skin for ringworm, ap-ap, thrush and other fungal infections – has its value although improvements could be made to maximize the effect. The juice, properly filtered and added to an ointment, could be tried.

GOGO — *Entara phaseoloides* (L.) Merr.

Balonos, barugu, bayogo (Bis.); lipai (*Ilk.*)

The abundant lather produced by the dried bark of gogo when it is mixed with water is due to its high saponin content. The saponin is sometimes used as a fish poison. Saponin levels are higher in the seeds than in the bark. The seeds also have fixed oil and traces of an alkaloid.

Among Asian countries, gogo is used medicinally to reduce different types of pain. It is not lear how gogo works as an analgesic – perhaps it is the combined action of all the different chenical constituents.

:UGGESTED PREPARATIONS AND USES

The *Philippine National Formulary* lists the following preparations:

Gogo Seeds – Pound kernels can be mixed with oil and applied externally for abdominal ɔain. A paste of the seeds is used as a counterirritant applied to glandular swellings.

PRECAUTIONS: A decoction of gogo seeds (1-3 gm.) is listed in the *Chinese Pharmacopoeia* for abdominal pain and hemorrhoids. Any internal use should be done with caution because of the ;aponin content. The saponin can cause vomiting.

VOTE: Gogo is of course the original "herbal shampoo." The bark is the part used. This "shampoo is also an effective way of removing dry crusts in scabies.

Fig. 41 – Akapulko *(Cassia alata* L.), a shrub with dark green compound leaves which are oblong. Flowers are yellow.

Fig. 42 – Dapdap *(Erythrina variegata* L. var. *oreintalis* Merr.), a tall tree with gray, smooth bark. Leaves are borne on long stalks with 3 triangular leaflets. Flowers are scarlet red.

DAPDAP (Fig. 26) *Erythrina varigata* L. *var. orientalis* Merr.

Bagbag, dubdub *(Ilk);* **andorogat, kabrab** *(Bik.)* Syn. *E. indica* Lam.

Dapdap's leaves and roots are used locally as a febrifuge while the bark and leaves are sometimes used as an expectorant and maturative for boils.

Alkaloids (erythrine, erythrinine, and other similar alkaloids) are found in the plant, particularly in the seeds. Saponin has also been reported in the leaves and bark.

Taken orally, the alkaloids act as sedatives and analgesics by depressing the central nervous ystem. Given by injection or taken in orally in excessively high doses, the alkaloids have a strong curare-like effect which can cause paralysis.

Extracts of the plant have been found to have antibacterial and antifungal properties.

:UGGESTED PREPARATIONS AND USES:

Decoction of Dapdap Bark or Leaves – A decoction is prepared using 1 gm of the pounded ɔark or 1-2 gm dried or 2-4 gm fresh leaves, to be taken daily in divided doses. The decoction is ɪsed for mild fever, as a cough sedative and as a calmative. It can also be used as an analgesic ɔr rheumatism, arthritis and lumbago.

External Uses – A decoction can be prepared from the bark or leaves (the amount varies according to the need and can range from 20 to 50 gm) as a wash for fungal infections, for bruises, sprains, cramps, rheumatism and arthritis. A tincture can also be tried for these conditions. The analgesic effect is much slower when used externally. Powdered bark is used for toothaches.

PRECAUTIONS: 1. The preparation should not be given orally to children below 2 years of age, in patients with weak hearts, in typhoid fever, lobar pneumonia. It is useless for chronic respiratory disorders such as asthma. Avoid continued use.

2. The seeds should not be used.

3. The Chinese use as much as 9-30 gm of the bark in decoction for oral administration but the depressant effect of the drug on the nervous system makes it necessary to use the plant with caution.

SAMPALOK *Tamarindus indica* L.
Salomagi (*Ilk.*); sambag (Bis.)

The pulp of sampalok is slightly laxative because of the presence of potassium bitartrate. On the other hand, the juice from the fruits is used in diarrhea because of the tannin. The fruits also contain pectin.

Tamarind pulp and leaves contain citric, acetic, butyric, tartaric and oxalic acids, which give characteristic sour taste to these plant parts. The fruit and leaves taken in decoction are refrigerant because the patient perspires (diaphoresis). Volatile oil is also found in the leaves, which is why it is sometimes used for cough.

Sampalok leaves are often used as a wash for wounds and laboratory tests have shown the leaves to inhibit the growth of two gram-positive organisms (*Bacillus pumilis* and *Sarcina lutea*). The antibacterial action is attributed mainly to glycosides.

SUGGESTED PREPARATIONS AND USES

Juice of Sampalok Fruit – The ripe fruit is crushed and mixed with water to obtain the juice. This is taken for fever and for diarrhea. For diarrhea, the fruit is sometimes mixed with saging (page 9).

External Uses – A decoction of the leaves, fruit and bark can be used as a wash for wounds sores, boils and caterpillar rash (*higad* – the effect is to reduce itching).

SLK Cough Syrup – See page 15. Sampalok leaves can be used to flavor many medicinal preparations.

SIBUKAW (Fig. 43) *Caesalpinia sappan* L.
Sappan (*Ilk.*, Tag.)

Sibukaw is the source of a yellow dye. The plant contains sappanin (the yellow material), volatile oil (in the leaves), tannic and gallic acids and saponin. It is not commonly used in the Philippines but in other Asian countries, it is often employed as an anti-diarrheal, anti-hermorrhagic and vulnerary.

Laboratory studies have shown it to have definite blood-clotting and vasoconstrictor propertis. It also has depressant action on the central nervous system. The colored material, like many other plant dyes, has anti-bacterial properties.

SUGGESTED PREPARATIONS AND USES

Decoction of Sibukaw Bark – The dried bark in decoction (3-9 gm.) is used for diarrhea, chest and stomach pains, bacterial dysentery, dysmenorrhea and post partum hemorrhage. Externally, it is used for wounds to stop the bleeding.

CONTRAINDICATIONS: The decoction should not be used by pregnant women. An interesting observation is that sibukaw, in decoction, is used as a contraceptive in some part of the Philippines.

UTAW *Glycine max* (L.) Merr.

Soybean (*Eng.*)

Utaw is a good source of protein, fat, iron, calcium and the B-complex vitamins. It contains lysine, an essential amino acid that is absent in cereals and other plants. Since cereals contain methionine and cystine, which are absent in soybeans, it is possible to come up with a "complete" protein diet by combining utaw with grain products. This is particularly important for vegetarians (including many of our urban and rural poor, who have no choice but to be "vegetarian" most of the year).

Soybean has also been recommended for diabetic patients because its carbohydrate content is low. Lecithin and linoleic acid, popular among health food faddists, are extracted from soybeans.

SUGGESTED PREPARATIONS AND USES

Soybeans and Soymilk – Soybeans are nutritive and its use should be encouraged, if at least for its protein. Soymilk is easily prepared by pounding the beans in hot water (6 cups boiling water for every 4 cups of beans). Additional soymilk can be collected by enclosing the pound

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Fig. 43 – Sibukaw [*Caesalpinia sappan* L.] is a small tree that has yellow flowers with hairy filaments.

Fig. 44 – Pistula [*Cassia fistula* L.] is called golden shower because of its beautiful yellow flowers that hang in long clusters. The fruits are long pods up to 30 cm.

Fig. 45 – Madre de kakaw [*Gliricidia sepium* (Jacq.) Steud.] is a tree frequently cultivated along fences. Pink flowers appear from December to April.

Fig. 46 – Saga [*Abrus precatorius* L.] is a vine up to 9 m long, found in thickets. It has small pink or purple flowers. Its fruits are oblong pods which open when ripe, exposing the characteristic red and black seeds.

beans in a cloth bag and pressing the bag to extract more of the liquid. The collected soymilk is boiled over medium heat until it starts to foam (bubble). The heat is reduced and the mixture allowed to simmer for about 5 minutes. This milk can be used by adults and children. It is particularly useful for people with lactase deficiency, i.e. people who cannot drink cow's milk because they lack an enzyme in their digestive system, which is needed to digest cow's milk.

Soybean Decoction – The dried seeds in decoction (6-12 gm) are used as a mild calmative for patients with fever, headache and restlessness due to colds and other ailments. Some Chinese herbals list a decoction using 9 gm rosal (page 62) and 9 gm ripe soybeans for the same purpose (calmative) but the mixture is said to be contra-indicated in lactating mothers.

OTHER MEDICINAL PLANTS FROM LEGUMINOSAE

Akasya [*Samanea saman* (Jacq.) Merr.] – A decoction of the inner bark and fresh leaves of acacia is used for diarrhea. The antidiarrhea principle is not believed to be tannin, which is found only in small quantities. The stems, bark, leaves and seeds have been found to be positive for alkaloids and one alkaloid, pithecolobin, has been isolated.

Both alcoholic and aqueous extracts of the leaves have been found to have significant antibacterial propperties, including action against *Mycobacterium tuberculosis* 607.

The bark of acacia also yields a gum similar but inferior to gum arabic.

Alibangbang [*Bauhinia malabarica* Roxb.] – The sour leaves of alibangbang are used to flavor meat and fish. Its bark is rich in tannin and is sometimes used in decoction for diarrhea.

Balatong-aso [*Cassia occidentalis* L.] – Like the other *Cassia* spp., balatong-aso contains anthraquinone glycosides, which have some anti-fungal and purgative properties. But balatong-aso is used mainly as a febrifuge – its leaves, seeds and root bark all producing antipyretic effects. It is not known what chemical constituents are responsible for this action. There has been a report on the stem bark containing alkaloids (n-methylmorpholine).

Balik-balik or bani [*Pongamia pinnata* (L.) Merr.]– Balik-balik leaves are used in decoction for cough and are used externally for itches. The seeds contain traces of volatile oil which raises the blood pressure and relaxes bronchioles in experimental animals.

The *Philippine National Formulary* cites several uses for bani. A decoction of the leaves can be used for coughing and gastric disorders (gas pains, dyspepsia, diarrhea) mainly because of the volatile oil. Externally, the juice from crushed roots and leaves is suggested for skin ulcers. For skin diseases, roast the seeds, pound and apply on affected areas. For hemorrhoids, the leaves can be finely pound or rolled into an elongated mass and inserted into the rectum as suppository.

Ipil-ipil [*Leucaena leucocephala* (Lam) de Wit.] Ipil-ipil seeds are often used as an anthelmintic. Researchers at the Philippine General Hospital suggest a dose of 0.5 to 1.0 gm. (20-45 seeds), finely powdered and prepared as an infusion. The effectivity is lower than niyog-niyugan (page 25) and the seeds have a bad taste.

Ipil-ipil seeds should be used cautiously because they can cause diarrhea. Ipil-ipil also contains mimosene, which causes alopecia (falling of hair) and sterility in animals. This happens when it is given in large amounts.

Kamatsili [*Pithecellobium dulce* (Roxb.) Benth.] has high levels of tannin in its bark. The *Philippine National Formulary* includes a decoction of kamatsile bark as an antidiarrheal. The seed oil of kamatsile is said to be similar to peanut oil.

Madre de kakaw or kakawati [*Gliricida sepium* (Jacq.) Steud – Fig. 45]. The strong smelling leaves of madre de kakaw are very popular as poultices for itches, wounds and skin diseases, including scabies. It is also used on animals to get rid of ticks and fleas. Dried twigs are burned as an insect repellant.

The *Philippine National Formulary* lists this plant for itching (juice or decoction of leaves, bark or roots) and as a counterirritant for rheumatic pains and closed fractures (crushed leaves).

Makahiya *(Mimosa pudica* L.) – The roots of makahiya are used locally as a diuretic, anti-asthmatic, anti-dysenteric and emmenagogue. The plant contains saponins, tannins, resins and glucosides. In laboratory animals, it depresses the central nervous system. It has been used as a sedative (2 to 3-1/2 tablespoonfuls of fresh root boiled in 500 ml water for ten minutes). A larger dose (30-60 gm of the whole plant in decoction) is mentioned in some Chinese herbals for use in insomnia. Prolonged use is known to cause nausea.

Mani *(Arachis hypogaea* L.) – Mani or peanut is a good source of protein and fat, as well as calcium, phosphorus, iron and the B-complex vitamins. The oil is used as a solvent for injections and for various skin creams.

Munggo *(Phaseolus radiatus* L.) – Munggo is another good source of protein and the B-complex vitamins. In fact, it has been suggested for use in treating beri-beri. Taugue (munggo bean sprouts) are very high in vitamin C and are also said to have more readily available nutrients.

Pistula or golden shower *(Cassia fistula* L.) – Among the *Cassia* spp., pistula's fruit is considered to be the more effective and safe purgative to use. A crude emulsion is prepared using the pulp of 2 or 3 fruits mixed with water and sugar. The dose is 1-2 teaspoons for a laxative effect and 1-2 tablespoonful for stronger effects. (Fig. 44).

The juice from the leaves can be used for ringworm and other fungal infections.

Tayuman (*Indigofera hirsuta* L.), tayum (*I. suffruticosa* Miller) and tina-tinaan (*I. tinctoria* L.) – These plants are the source of the blue dye indigo. The dye has antibacterial activity and is astringent. The leaves and roots are used medicinally, usually as a poultice or wash for wounds, bites, stings and abscesses. In China, fresh leaves of tina-tinaan are used in decoction for fevers accompanying laryngitis, measles and mumps. Locally, tayuman has been recorded to be used for diarrhea. Large doses will cause nausea and purging.

POISONOUS LEGUMES

Patani or lima bean *(Phaeolus lunatus* L.) – Patani exists both in the wild and cultivated states. Wild patani is poisonous because of the high level of cyanogentic glucosides. It is not known to be used medicinally.

Saga (*Abrus precatorius* L.) – Saga seeds contain very poisonous toxalbumins of which abrin is the most important. The toxalbumins agglutinate red blood cells. The seeds were formerly used to treat chronic granular conjunctivitis but this has since been stopped. The roots contain glycyrrhizin, which is a remedy for coughing and for gastric and duodenal ulcers because of its demulcent action but even glycyrrhizin has been found to cause edema, hypertension and cardiac asthma. In addition, small quantities of abrin are also found in the roots. (Fig. 46).

Tubli [*Derris elliptica (*Roxb.) Benth.] – The root of tubli is used as fish poison in many parts of Southeast Asia. The toxic substance is rotenone, which is now commonly used as an insecticide. Rotenone is effective against both biting and sucking insects, including plant lice, leaf beetles, aphids, flies, caterpillars, ticks and chicken lice. It is safer to use than other insecticides because it does not leave residues.

Sinkamas [*Pachyrrhizus erosus* (L.) Urb.] – Sinkamas seeds are poisonous. The toxic principle is believed to be either a glucoside (pachyrrhizid) or resin. Powdered seeds are sometimes used to poison dogs and pigs. Taken internally by human beings, the seeds are purgative.

Family LOGANIACEAE

Several members of this family contain strychnine, an alkaloid which stimulates the spinal cord. In toxic doses, it produces convulsions. Among the local species, pepita-sa-katbalonga

(Strychnos ignatii Berg.– Fig. 47) is the more familiar. It is sometimes used for fever but is dangerous and should be avoided.

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Fig. 47 – Pepita-sa-katbalonga *(Strychnos ignatii* Berg.), a larger vine found in forests with white flowers and rounded pale yellow or brown fruits 10 cm or more in diameter.
Fig. 48 – Banaba *(Lagerstroemia speciosa* (L.) Pers.), a tree 4 to 20 m high, found wild and in cultivation. Its lilac-purple flowers appear from April to August.

Family **LYTHRACEAE**

BANABA (Fig. 48) *Lagestroemia speciosa* (L.) Pers.
Syn. *L. flos-reginae* Retz.

Banaba has long been in use for diabetes in folk medicine, and both local and foreign investigations of banaba have established that banaba is diuretic and hypoglycemic.

Although banaba has been shown to have definite hypoglycemic action, researchers have not been able to identify the chemical constituent responsible for this action. Constituents that have been found in the plant include tannin (10-15%) in the bark, saponin in the stems and amino acids in the leaves. Tests for alkaloids, glycosides, sterols and flavonols have been negative.

Besides its use in diabetes, banaba's tannin content makes it an astringent and anti-diarrheal. One local physician using banaba to treat diabetic patients also noticed increased uric acid excretions and suggested that banaba might be of some use for gout.

A decoction of banaba seeds is said to have narcotic-like action but this has not been investigated.

SUGGESTED PREPARATIONS AND USES

Banaba Decoction – Based on research into the "insulin-like" activity of different parts of bnnaba, Garcia suggests the following daily dose, prepared as 20% decoctions:*

Old leaves dried for a week – 85 gm (in 420 ml. water)
Ripe fruits dried for a week – 90 gm (in 450 ml. water)

*1. Distribution of insulin-like principle in different plants and its therapeutic application to a few cases of diabetis mellitus. *Phil J. Sci.* 76:3-11. [1944] and 2. The treatment of diabetes mellitus by the use of different Philippine medicinal plants and a preliminary report on the use of Plantisul. *Proc. 8th Pac. Sci. Congress.* Vol. IV-A. Manila: National Research Council of the Philippines [1954]. Both articles are by Faustino Garcia.

Young leaves dried for two weeks – 125 gm (in 500 ml. water)

The decoction is prepared daily, using whatever plant part is available. The decoction is boiled down to 100 ml. of water. This 100 ml. is taken in divided doses, 1/2 to 1 hour before meals. Observe dietary restrictions.

A milder decoction using a few leaves can also be taken as an antidiarrheal. Because of its diuretic action, the mild decoction of banaba can also be taken in conditions where diuresis is indicated (e.g. edema, urinary tract infections). It can also be tried in gout.

NOTE: The Chinese also use a decoction prepared from 90 to 240 gm of the roots. Banaba is characterized as "detoxifying, breaking up and purging clots (bruises), eliminating (excess) moisture and promoting diuresis." The decoction of roots is prescribed for boils, ulcers, abscesses, jaundice, abdominal distention, edema, oozing dermatitis, mucus dysentery, post-partum abdominal pain and dizziness.

Because of its high tannin levels, prolonged use of banaba may not be advisable. Additional research needs to be done to establish just what the "insulin-like" principle is and to isolate and purify it for easier administration.

Family MALVACEAE

The name of this family derived from the world *malake* (soft) because several members of this family produce mucilage which is useful medicinally as a demulcent. Examples of plants producing mucilage are okra[1] (which is discussed below), kastuli[2] and malbas[3]

Also members of this family are the different types of gumamela *(Hibiscus* spp) which are widely and effectively used as poultices for boils and carbuncles.

Walis-walisan[4] and walis-haba[5], two other members of Malvaceae, have been found to contain ephedrine, which is a broncho-dilator.

[1] *Abelmoschus esculentus* (L.) Moench

[2] *Abelmoschus moschatus* Medic.

[3] *Abutilon indicum* (L.) Sweet

[4] *Sida acuta* Burm. f.

[5] *Sida rhombifolia* L.

OKRA — *Abelmoschus esculentus* (L.) Moench.

The okra commonly eaten as a vegetable is actually the immature fruit of the plant. As a vegetable, it is a good source of calcium and phosphorus. It also contains abundant pectin and mucilage.

The mucilage has medicinal value as a demulcent. Besides the fruit, the leaves and the roots can be boiled in water to obtain the mucilage, which is useful for ailments involving irritation of the gastro-intestinal and urinary tract. Externally, the mucilage is useful for soothing inflammation accompanying various skin ailments.

SUGGESTED PREPARATIONS AND USES

The simplest method to obtain the mucilage is to boil the fruit in water. If leaves or roots are used, about 500 gm are used for every liter of water. Boil down to half the original amount of water. If roots are used, peel the bark off before using.

The preparation can be used for coughing, sore throat, gastritis, enteritis, nephritis, dysuria (difficulty in urination) as a demulcent Externally, the mucilage can be applied on skin inflammations.

A cough syrup can also be prepared using the mucilage with water and adding other plants with volatile oils.

GUMAMELA	*Hibiscus rosasinensis* L.
GUMAMELANG ASUL	*H. syriacus* L.
AMAPOLA	*H. mutabilis* L.

Medicinally, the buds of gumamelas are best known for their use as poultices for boils and carbuncles. The action of the bud is one of relieving the pain and hastening the ripening of the boil (maturative).

Like the other members of Malvaceae, the *Hibiscus* spp. also yield mucilage, which may exert an emollient effect, (Gumamela is sometimes used in folk medicine as a cough remedy) Saponins and the glycoside vitexin have been reported to be present in the flowers. It is not clear if these constituents are responsible for the maturative action on the boils.

The *Hibiscus* spp. contain unusual fatty acids (malvalic and vermolic) which have cyclopropene rings.

The barks of different *Hibiscus* spp. have been found to have significant anti-fungal action.

SUGGESTED PREPARATIONS AND USES

Poultice – Buds or leaves of the different gumamela flowers can be crushed and applied on boils, felons and carbuncles. Change the poultice daily. They can also be mixed with tea and applied as compresses on ulcers, abscesses and burns.

Tinctures – Tincture are prepared using the bark of the roots. Use 100 gm of the bark in 150 ml water and enough rubbing alcohol to make 500 ml. Keep the bark in the alcohol solution for one week and then filter and use as a paint for *tinea pedis* ("athelete's foot"). Apply once or twice daily. The tincture can also be tried for other fungal infections.

Another way of preparing the tincture is to use 50 gm of the bark steeped in 150 ml alcohol for one day before filtering. This tincture has also been reported to yield good results.

Vinegars – The bark of the root crushed and mixed with vinegar can be applied directly on fungal skin infections.

Decoction– A decoction using 60 gm of the flowers in 100 ml sugar water can be given daily as a demulcent for bronchitis, gastritis, enteritis and other inflammatory conditions.

A decoction of 10-30 gm dried amapola flowers is official in the *Chinese Pharmacopoeia* and is used for coughing, rhinitis, lymphageitis and appendicitis. Externally, it is indicated for otitis and for burns. Also listed is a decoction of 3-9 gm dried gumamelang asul for dysentery, dirrhea, bleeding hemorrhoids and leucorrhea.

Family MELIACEAE

Lansones[1] and paraiso[2] (Fig. 49) are anthelmintic. The seeds of lansones contain alkaloids which are anthelmintic but the safe and effective dose has not been established. The seeds of lansones are also said to be antipyretic and are used for that purpose in Indonesia.

Paraiso is officially used in China as an anthelmintic (for roundworms at a a dose of 4.5-9 gm of the bark in decoction) but the active principle of paraiso, margosine, is moderately toxic and is unpredictable in the possible side-effects.

The rind of the fruit of lansones can be dried and burned to drive away mosquitoes. The insect repellant effect is due to the presence of lansium acid. The rind is also rich in tannin and contains an oleoresin and some reducing acids. The rind is sometimes used in diarrhea as an anti-spasmodic.

Paraiso's toxic principle can be put to good use for treating scabies and hair lice (kuto). The crushed leaves or flowers are applied externally. Oil expressed from the seeds of paraiso

Fig. 49 – Paraiso [*Melia azedarach* L.] is a shrub 3-4 m high with pale lilac flowers.

is also said to be useful for ringworms, scabies and other skin diseases because of the presence of of margosine as well as sulfur.

Santol's[3] bark contains an insecticidal substance, sandoricum acid. The pounded bark can be used externally for ringworm.

Members of this family are also noted for their high tannin content. The *Philippine National Formulary* lists two of these plants that can be used for their tannin:

Kalantas[4] bark can be prepared as a decoction and used as a wash for wounds while a decoction of the fruits and seeds of piyagaw[5] can be used as an antidiarrheal.

[1] *Lansium domesticum* Correa [2] *Melia azedarach* L. [3] *Sandoricum koetjape* Burm. f. Merr.

[4] *Toona calantas* Merr. & Rolfe [5] *Xylocarpus moluccensis* Lam.

Family MENISPERMACEAE

This family of wild growing vines holds great potential as a source of many useful drugs. The fruit of lagtang[1] is used locally as a fish poison but its toxic constituent, picrotoxin, has been used as an antidote for barbiturate poisoning.

Sansaw[2], sometimes used locally for scabies, contains alkaloids which are now used as muscle relaxants (for surgery) in China. The alkaloids are also being investigated in the West because of evidence of antitumor activity. Sansau is listed in the *Chinese Pharmacopoeia* – a decoction of the whole plant can be used as a wash (external) for wounds to stop pain and bleeding.

Ambal[3] is being studied here and in other countries because of alkaloids (pycnarrhine, ambaline, ambalinine and others) with hypotensive action. Ambal is listed in the *Philippine National Formulary* – a warm infusion prepared from the roots and stems can be used as a vaginal wash after childbirth. The infusion is also suggested for external use in skin ulcers.

The different species of *Stephania,* which are found only in higher altitudes, may yield alkaloids similar to those found in Japanese species. One particular alkaloid, (+)–cepharanthine, has been found to be of value in the treatment of tuberculosis and leprosy.

Two members of this family are widely used locally and will be discussed below.

[1] *Anamirta cocculus* (L.) W. and A. [2] *Cissampelos pareira* L. [3] *Pycnarrhena manillensis* Vidal

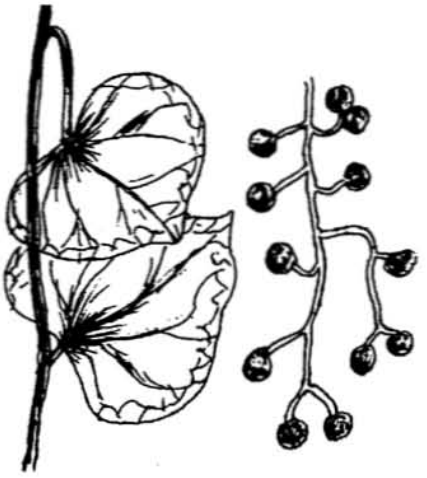

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Fig. 50 – Abutra [*Arcangelisia flava* (L.) Merr.], a vine found in forests with leathery leaves, yellowish flowers and green or yellowish-green fruits.

Fig. 51 – Makabuhay [*Tinospora crispa* (L.) Miers ex H.&T.], a vine 4 to 20 m high with numerous protuberances on the stem. Flowers are pale green and fruits are orange berries.

ABUTRA (Fig. 50) *Arcangelisia flava* (L.) Merr.

Abustra, uplig *(Ilk);* lagtang *(Bik);* a(li)bu(s)tra, lagtal, lagtan(g) *(Bis.);* Suma *(Tag.)*

Abutra is widely used locally as a wash for wounds, a febrifuge, emmenagogue, stomachic and expectorant.

The medicinal actions of abutra are due to the presence of several alkaloids, mainly berberine and berberine-like alkaloids such as jatrorhizine, columbamine and palmatin.

Berberine is one of the few colored (yellow) alkaloids. It has been shown to have marked antibacterial, antiprotozoal (including *Entamoeba histolytica,* which causes amoebic dysentery), antifungal and anthelmintic actions. Berberine has also been found to be active against *Mycobacterium smegmaris* ATCC 607. A synthetic drug obtained from berberine, B-allylberberine bromide, has been found to be a potential anti-tuberculosis drug.

Berberine depresses the central nervous system and has anti-convulsant and sedative properties. It also relaxes the smooth muscles of the intestines, making it an antispasmodic.

Berberine's action on fever is probably due to two effects – as a germicidal, it fights some of the infections organisms causing the fever and as a central nervous system depressant, it acts on the medullary centers regulating body heat. Berberine's action as an emmenagogue has been established in the laboratory, where the alkaloid was found to stimulate contractions of the uterus.

Several plants in the Philippines have been found to contain berberine but abutra has the highest level (4.5 to 5%) known at present.

Much more can still be done to tap berberine as a drug, whether in its crude form as found in the plant or in purified extracts.

SUGGESTED PREPARATIONS AND USES

Decoction of Abutra Stem – Use 1-2 gm of the powdered stem in decoction two to three times daily. (Boil the stem in a glassful of water.) The decoction can be taken in fever, in functional dysmenorrhea and amenorrhea. The decoction can be tried for dysentery.

A stronger concentration can be used externally as a wash for wounds, skin ulcers and for fungal infections.

Abutra and Coconut Oil – The crushed stem of abutra can be applied with coconut oil for fungal skin infections. Other preparations (ointment) can be improvised using abutra.

CONTRAINDICATIONS: Abutra should not be used in patients with cardiac disorders and in children below three years as well as weak individuals. It is also contraindicated in pregnant patients, and in fever due to typhoid and lobar pneumonia.

MAKABUHAY (Fig. 51) *Tinospura crispa* (L.) Miers ex H.&T.

Paliaban, panauan, pangiau (b) an, tagunagtagua *(Bis)*

The name of this plant, makabuhay ("to give life") reflects its popularity as a medicinal plant. It is widely used for fever. digestive disorders and skin disorders.

Like abutra, makabuhay contains berberine, but only in trace amounts. Other alkaloids (tinosporin, tinosporan, tinosporidin – all of which are similar to the berberine alkaloids) are found in the leaves and stems. Bitter principles believed to be glycosides are also present.

The bitter principle is believed to be insecticidal. Some farmers are known to broadcast cut pieces of stem in their rice fields to lower the pest populations. The plant seems effective – repelling some insects and killing others. One study has found the plant extract to be quite effective against houseflies.

On experimental animals, makabuhay has been found to depress medullary centers. Its action is stronger than abutra.

SUGGESTED PREPARATIONS AND USES

Decoction of Makabuhay Stem – The dose and uses of makabuhay are similar to that of abutra except that makabuhay is not known to be of use in dysmenorrhea or amenorrhea.

CONTRAINDICATIONS: The contraindications for abutra apply to makabuhay.

Family MORACEAE

This family has a number of medicinal plants. The fruits of antipolo[1], kamansi[2], anubing[3], nangka[4] and rimas[5] are used in diarrhea because of their pectin content.

The barks of different *Ficus* spp. – balete[6], rubber tree[7], payapa[8], creeping fig[9], – have moderate to high tannin levels and are often used as astringents and styptics for wounds. In addition, some of these trees contain ficin, a proteolytic enzyme, in their milky latex. Ficin from the latex of isis[10] has been used with good results for roundworms *(Ascaris)*, hookworms *(Ancylostoma)* and, to some extent, for whipworms *(Trichuris)*. The dose used is 15 to 30 ml (1-1/2-3 tablespoonful) of the latex collected with a clean knife from the trunk of isis. The latex is mixed with two volumes of water and a little sugar and is given on an empty stomach. A purgative is administered one or two hours after the latex is taken. As with papaya latex, isis' latex should not be given to patients with peptic ulcers.

Ipo[11] is a tree whose leaves and bark yield a latex that is poisonous. The latex is used in many Asian countries as an arrow poison. The plant's toxicity is due to the presence of digitalis-like glycosides (see page 18).

Moras or mulberry[12] is a very popular medicinal plant in China. The Chinese Pharmacopoeia lists nearly all parts of the plant as medicinal. The leaves (4.5-9 gm.) are recommended for colds, cough, dizziness and opthalmia. The bark (4.5-9 gm.) is considered a diuretic. The branches (9-15 gm.) are recommended as an analgesic, particularly for muscle pains. And the fruits (9-15 gm.) are cited for dizziness, ringing of the ears, heart palpitations. The Chinese classify the plant as a tonic and restorative. Experimentally, plant extracts have shown hypoglycemic and anti-fungal activity.

[1] *Artocarpus blancoi* (Elm.) Merr.
[2] *A. camansi* Blco.
[3] *A. cumingiana* Tec.
[4] *A.heterophylla* Lam.
[5] *A. altilis* (Park.) Forst.
[6] *Ficus benjamina* L.
[7] *F.elastica* Roxb.
[8] *F. payapa* Blco.
[9] *F. pumila* L.
[10] *F. ulmifolia* Lam.

Family MORINGACEAE

MALUNGGAY — *Moringa oleifera* Lam.

Malunggay leaves are very good sources of iron, calcium, phosphorus, vitamins A and C.

Besides serving as food, the bark and leaves of malunggay are often used locally as a styptic for wounds. An Indian study did, in fact, isolate two alkaloids ("moringin" and "moringinin") from the bark and the two alkaloids were found to have adrenaline-like properties. (Adrenaline is a vasoconstrictor). Indian researchers also reported the isolation of a substance from the roots, which they named pterygospermin. Pterygospermin was shown to have antibiotic properties.

The leaves and flowers are also used locally be nursing mothers to increase lactation while a decoction of the roots is often used as a wash for sores and skin ulcers.

The roots are often made into a plaster (counter-irritant) for rheumatism. Indian researchers found an alcoholic extract of the root bark to have anti-inflammatory action.

The seeds of malunggay yield ben oil, which is mainly oleic, palmitic and stearic acids. The oil is used in India as a rubefacient and it has been found to be particularly valuable as an ointment base because of its keeping quality.

SUGGESTED PREPARATIONS AND USES

Leaves and Flowers – The leaves and flowers can be used as dietary supplements, particularly for anemic patients. The lactagogue action of malunggay is not understood but it has definite value for nursing mothers.

The leaves and stem can be used externally as a styptic for wounds. A decoction can be prepared as a wash for sores and skin ulcers.

Seeds – Roast the seeds, powder and apply on painful areas in rheumatism.

Family MYRTACEAE

Members of this family are noted for their tannin content and volatile oils. Eucalyptus is perhaps the best known among the plants with volatile oils. A few species of Eucalyptus grow in the Philippines, usually at higher altitudes. Other members of this family include duhat, bayabas and macopa. Duhat and bayabas will be discussed below.

BAYABAS — *Psidium guavaja* L.
Guava (Sp.)

Perhaps because of its wide distribution, bayabas is also one of the most popular medicinal plants. It is used in diarrhea, as a wash for wounds as well as for other skin disorders, especially those involving intense itching.

Its medicinal actions are due mainly to its high tannin content, both in the leaves and in the bark. Tannin makes guava useful as an anti-diarrhea agent and as an astringent for wounds.

The fruit of bayabas also contains moderate amounts of pectin, another useful anti-diarrheal. Pectin content is higher in the green variety than in the red.

Among Philippine fruits, bayabas has one of the highest vitamin C content (as high as 100-130 mg/100 gm of the fruit). It also contains high levels of calcium, phosphorus and potassium.

Other chemical constituents of bayabas include saponin (leaves and stem), amygdalin, a cyanogenetic glucoside (stem) and volatile oil (fruit and leaves.) The volatile oil includes phenol and aldehyde substances and has been shown to have antibacterial properties against Gram negative bacteria.

SUGGESTED PREPARATIONS AND USES

Bayabas Decoction – A 5% decoction (5 gm. leaves or unripe fruit in 100 ml. water) can be used for diarrhea.

ABK Decoction – See page 42.

Fruit – The unripe fruit can be eaten to treat diarrhea, or the juice can be extracted and mixed with tutong (burnt rice – See page 5).

Powdered Peel – The peel or the rind of guava can be removed, dried, and ground into powder. In clinical trials conducted at one Manila hospital, 1 gm of the dried powdered peel was given three times daily with water to children with diarrhea. The results were satisfactory even in severe diarrhea cases, although treatment was given together with fluid replacement and antibiotics, where necessary.

Bayabas Retention Enema – Because of the observation that tannin is easily broken down in the intestinal tract, another physician came up with the use of a decoction of bayabas leaves as retention enema. The results were also satisfactory. A handful of bayabas leaveswas boiled in a little water until the water turned a deep brown. The decoction was cooled down to lukewarm temperature and then given as an enema (10-30 ml), introduced very slowly.

External Uses – A decoction of the leaves can be used as a wash for wounds and for certain skin diseases, involving intense itching. There have been some reports on its value for scabies.

PRECAUTIONS: Avoid prolonged use of the oral preparations and the enema.

DUHAT — *Syzygium cuminii* (L.) Skeels
Lomboi *(Ilk. Bik., Bis.)*

The bark in decoction, as well as the syrup from the fruits, are used locally for diarrhea and for diabetes.

The plant is rich in tannins (ellagic and gallic acids, up to 20% in the bark), which makes it an astringent for treating diarrhea. The fruits contain volatile oil (0.05%) of a complex mixture. Other chemical constituents include pigments, phenolic substances (quercetin, kampferol, myricetin, isoquercitrin) and some sugars.

Laboratory experiments and clinical trials have shown duhat extracts (pulp, seeds, leaves, bark) to reduce blood sugar.

SUGGESTED PREPARATIONS AND USES

Decoction of Duhat Bark or Leaves – A decoction of the bark or leaves can be used as an enema for diarrhea, similar to bayabas.

Although various parts of duhat have been found to be hypoglycemic, an exact dose has not been well established. A decoction of the bark or leaves can be tried but should not be used for long periods because of the high tannin levels. The sseds or fruit may be safer – in fact, "duhat wine" is produced from the fruits and is used by many diabetics.

A decoction of the bark can be used as a gargle for gingivitis and, externally, for wounds.

Duhat Fruit – The fruit is astringent and can be eaten fresh as an antidiarrheal.

Family OLEACEAE

SAMPAGUITA — *Jasminum sambac* (L.) Ait.

Sampaguita flowers yield an essential oil similar to jasmin (J. *grandiflorum* L.), which contains d-linalool and benzyl-acetate and mericyl alcohol.

The flowers are used to prepare an eyewash for conjunctivitis, the effect being one of decongestion. Another traditional use is the application of the flowers to the breast as a lactifuge, i.e. to inhibit or arrest the secretion of milk. The lactifuge principle has not been established.

SUGGESTED PREPARATIONS AND USES

Sampaguita Collyrium – Heat 100 ml water to boiling and add 2-3 fresh flowers. Remove immediately from heat and filter. Use when cool as an eye wash for simple catarrhal conjunctivitis. Use only fresh preparations.

Decoction of Sampaguita – Fresh or dried flowers can be used. The usual amount is 3-6 gm. (Each flower is about 1/2 gram fresh). The decoction can be used for fever, coughs and stomachache. It can be tried for heartburn due to ulcers. Externally, the flowers or leaves can be applied on skin ulcers.

Family **PEDALIACEAE**

LINGA (Fig. 35) — *Sesamum orientale*, L.
S. indicum L.

Lenga *(Ilk.)*; langa *(Bik., Bis)*; lunga *(Bis.)*

The seeds of linga or sesame contain fixed oil (50-60%) consisting of oleic, linoleic, palmitic and stearic acids, some resin, lecithin, choline, phytin.

The oil is useful as an anti-rheumatic when used externally. Taken orally, it is laxative. It is also said to be useful in treating kidney and liver disorders associated with headache, dizziness, tinnitus (ringing of the ear), blurred vision.

SUGGESTED PREPARATIONS AND USES

Sesame Oil – Crude sesame oil can be obtained by boiling the dried seeds. Use 10-30 gm of the seeds and boil in 100 ml water. The oil can be used externally in massage treatment for rheumatism, muscle pain, sprains. One or two tablespoonful of the oil mixed with the juice from sibuyas (onion) can be given to children suffering from stomach pain due to intestinal obstruction by roundworms. The oil is also a laxative.

For the conditions described above (associated with kidney and liver disorders), the Chinese combine equal amounts of sesame with moras or mulberry in decoction.

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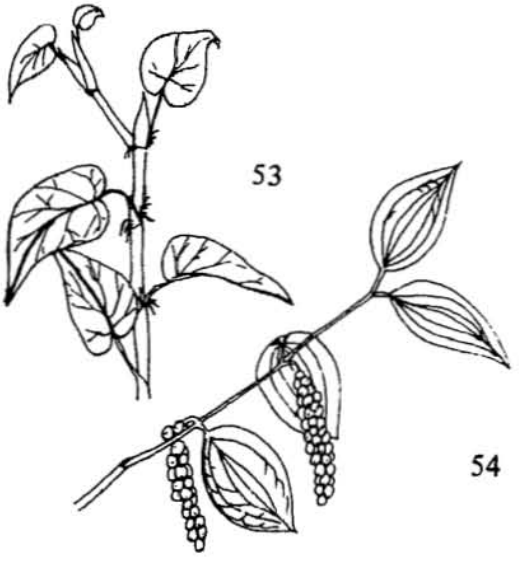

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Fig. 52 – Linga *(Sesamum orientale* L.), an annual, hairy herb .5 to 1 m high, occassionally cultivated.

Fig. 53 – a, Ikmo *(Piper betle* L.) Fig. 54 – Paminta (*Piper nigrum* L.),

Family PIPERACEAE

This family includes ikmo[1], which has been mentioned earlier in connection with betel nut chewing. Other members of the family are the table spices paminta[2] and siling mahaba[3] and various weeds such as ikmong-bata[4], subia[5], and kukamba[6]. These plants are used medicinally and their actions are similar, due mainly to their volatile oils and resins. A few also have alkaloids. Their effect is one of stimulation, with action similar to, but weaker than red pepper or sili[7]. Internally, their stimulant action on the gastric mucosa makes them useful as carminatives while externally, they are sometimes used for swellings, bruises, muscle pains.

[1] *Piper betle* L.
[2] *Piper nigrum* L.
[3] *Piper longum* L.
[4] *Peperomia pellucida* (L.) HBK
[5] *Piper retrofractum* Vahl.
[6] *Piper umbellatum* L. subpeltatium
[7] *Capsicum* spp.

IKMO (Fig. 53) — *Piper betle* L.

Gaued *(Ilk.);* buyo *(Bik.);* buyok, kanisi, mamin, mamon *(Bis.)*

Ikmo leaves are 0.7-2.6% volatile oil, of which 60-80% are phenylpropanes (chavicol, chavibetol) and the rest composed of cineol, cavacrol, p-cymol and other terpinenes and sesquiterpenes. The leaves also contain tannin. An alkaloid, arakene, with cocaine-like properties, is said to be present as well.

Ikmo is antispetic becasue of its volatile oil (particularly because of chavicol). The tannin makes the leaves astringent.

The volatile oil is also responsible for ikmo's other actions – sialogogue, stimulant, carminative and counter-irritant. The leaves are also said to be mildly anti-pyretic because of the alkaloid.

PREPARATIONS AND USES

Decoction of Ikmo Leaves – A decoction of the leaves can be given for fever, stomach ache, diarrhea, indigestion and flatulence. Use 9-15 gm of dried material or 30-60 gm fresh material.

External Uses – Crushed leaves (fresh) can be applied on cuts and wounds as an antiseptic. Mixed with oil, the leaves can be used as a poultice (a) on the chest for bronchitis and other respiratory disorders; (b) on the abdominal region for flatulence and (c) on swellings, bruises, painful sores, as a counter-irritant.

PAMINTA (Fig. 54) — *Piper nigrum* L.

The fruit of paminta has 1-2.5% volatile oil, chiefly 1-phellandrene and caryophyllene. In addition, the fruit contains 5-10% alkaloids, mainly piperine, piperidine. The alkaloid piperine is a mild antipyretic. The use of pepper with hot soup for colds is based on the ability of pepper to promote perspiration (to reduce fever). Pepper also makes the patient sneeze, and this helps clear up congestion.

The uses of paminta are typical. The volatile oil makes it a carminative and mild bronchodilator. Pepper mixed with oil has also been said to be anti-fungal. Externally, pepper is a counter-irritant.

The Chinese report that the alkaloid piperine is an effective anti-epileptic agent. In 1974, they synthesized a derivative of piperine and used it successfully in the treatment of cases of epilepsy which had not responded to western drugs.

SUGGESTED PREPARATIONS AND USES

Decoction of Paminta Fruits – The *Chinese Pharmacopoeia* gives a dose of 0.6 to 1.5 gm of the ripe berries, to be used for colds, diarrheaa and indigestion. Epilepsy is also listed as one of the ailments which paminta can be used for. Externally, paminta is recommended as a counter-irritant for rheumatism and muscle pains (See BLS Oil – page 15).

Family PORTULACACEAE

GULASIMAN (Fig. 55) *Portulaca oleracea* L.

Ngalug *(Ilk.)*; alusiman, ausiman, sahikan *(Bik.)*;

Gulasiman or purslane is reported to be used locally as an anti-hemorrhagic, diuretic and remedy for burns and skin diseases.

The plant contains (–) noradrenaline (levarteronol or norepinephrine), dopamine and dopa. The noradrenaline content (2.5 mg/gm in fresh plants, according to a West Indies study) is the highest so far to be reported for plants and may be greater than that extractable from suprarenal glands of mammals.

The amines have a pressor effect. Gulasiman is reported to constrict blood vessels and stimulate uterine contractions. Marked anti-fungal and anti-bacterial *(Staphylococcus aureus, Escherichia coli, Shigella dysenteride, Salmonella typhi)* activity have been reported.

Other chemical constituents reported present in gulasiman are tannins, urea and various minerals including large amounts of magnesium and potassium. The potassium salts are responsible for gulasiman's diuretic effect.

Gulasiman is sometimes eaten locally as a vegetable. It is a good source of calcium, phosphorus, iron and vitamin C. The Chinese also report high levels of thiamine (vitamin B_1) but a local analysis of the plant yielded much lower levels of the vitamin.

SUGGESTED PREPARATIONS AND USES

Gulasiman Decoction – The whole plant is used, 9-15 gm. dried or 30-150 gm fresh. The decoction can be given daily in divided doses for bacterial dysentery, enteritis, urinary tract infections, leukorrhea and mastitis. Several reports also cite its use for whooping cough.

External Uses – The crushed fresh plant can be applied externally to stop bleeding, including uterine bleeding following child delivery. It can also be applied on bruises, skin ulcers, skin fungal infections, insect bites and strings.

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Fig. 55 – Gulasiman *(Portulaca oleracea* L.), a wild growing herb with many branches. The stems are fleshy and purplish. Yellow flowers are sometimes produced.

Fig. 56 – Granada *(Punica granatum* L.), a shrub 2-3 m high, occasionally cultivated. Its fruits are red or purple, about 5 cm in diameter.

Family PUNICACEAE

GRANADA (Fig. 56) *Punica granatum* L.

Granada is used locally as a gargle and anthelmintic. The use of granada for tapeworms was formerly widespread, both in the East and in the West but has declined with the discovery of safer drugs.

The anthelmintic action of granada is due to the presence of pelletierine alkaloids in its bark. The bark also contains tannins and glucosides.

The bark in decoction has been found to have antifungal and anti-bacterial *(Pseudomonas aeruginosa, Shigella flexneri, Salmonella typhi)* activity. This is probably due to a combined action of the alkaloids and the tannin.

SUGGESTED PREPARATIONS AND USES

Decoction of Granda Bark – As a taenifuge, 2.5-4.5 gm of the bark is used. The decoction is given in the morning on an empty stomach.

For diarrhea and bacterial dysentery, a weaker decoction using 9-15 gm of the bark is given daily in divided doses.

External Uses: A decoction of the bark can be used as a wash for wounds, skin sores and ulcers and fungal infections.

PRECAUTIONS

1. Pelletierine has nicotine-like characteristics and should be used with caution. Signs of poisoning include nausea, vomiting, diarrhea, headache, dizziness, tachycardia (increased rate of heartbeat), hypertension, sweating and salivation. Serious poisoning results in convulsions, respiratory depression and arrest.

TREATMENT: Gastric lavage with charcoal or, preferably 1:10,000 solution of potassium permanganate. Atropine is also of value.

2. The decoction of granada stimulates gastric secretions and is contraindicated in patients with gastric ulcers.

Family RUBIACEAE

Several useful medicinal plants belong to the family, notably the *Cinchona* spp., from which the anti-malarial alkaloid quinine is obtained. Several *Cinchona* species were introduced to the Philippines and for some time before the last world war, the Philippines was a large producer of the trees.

Ulasiman-kalat [*Oldenlandia diffusa* (Willd.) Roxb.] has been tested and is being used for the treatment of leukemia in China. The plant grows wild in the Philippines and is not known to be used locally as a medicinal plant.

KAPE *Coffea* spp.

Several species of coffee are grown locally. The fruits are the ones processed into coffee used as beverages. Coffee's main physiological action is one of stimulation and this is due to the presence of caffeine. Among the xanthines (caffeine, theophylline and theobromine), caffeine is the strongest central nervous system stimulant. Its stimulant effect on the gastrointestinal tract is the reason why patients with ulcers are not supposed to take coffee. In excessive quantities, coffee produces insomnia. Children are not supposed to take coffee, not because of any direct effect on the growth hormones but because it produce sleeplessness and children need sleep for growth. Caffeine is also found in tea, cocoa and cola drinks.

Caffeine has many medicinal uses. Black coffee, for instance, has definite value in counteracting the effects of certain central nervous system depressants such as alcohol, barbiturates and opium. It is also useful for headaches because of a vasoconstrictor effect on the cerebral blood vessels. Proprietary analgesic preparations still use caffeine, often together with other analgesic drugs.

SUGGESTED PREPARATIONS AND USES

The most practical way to take "caffeine" is to prepare black coffee. Commercial preparations of coffee contain few of the real coffee beans and would be less effective.

Black coffee can be taken to counteract depression caused by alcohol and barbiturates. It also acts as a diuretic and helps the body clear the toxic depressants.

Coffee can also be tried for headaches.

For patients with ulcers, coffee should be avoided. If it is necessary to take coffee, have it well diluted with milk.

SANTAN (Fig. 57) *Ixora coccinea L.*

Tangpupu *(Bis.)*

Santan flowers are popularly used for dysentery and leucorrhea, as well as for hemoptysis and bronchitis. The roots in decoction are also reportedly used as a sedative in nausea, hiccoughs and loss of appetite.

The plant's chemical constituents have not been investigated in depth. The Indians report the flowers to contain "coloring matter, an astringent principle of the nature of an organic acid, a wax, yellow coloring matter related to quercitrin, and ash" while the roots were found to have "an aromatic, acrid oil, tannin, fatty acids, and a white crystalline substances." A Malaysian study found the stems to be negative for alkaloids, saponins and steroids while the leaves were positive for steroids.

Pharmacologically, the plant has been found to stimulate gastric and bile secretions (Indian studies). A local investigation using experimental animals found the decoction from the flower did not have any local effect on the intestines. The Indians speculate that the plant's usefulness in diarrhea and dysentery is due to its stimulating effect on gastric and bile secretions and in the relief of colicky pains.

PRECAUTIONS

Begin with small doses, especially in children. Signs of toxicity include dizziness and depression. Suspend treatment when these signs appear and resume treatment only after some rest. Use smaller doses when treatment is resumed.

SUGGESTED PREPARATIONS AND USES

Decoction of Santan Flowers – Use 3 gm of fresh crushed flowers in decoction. The decoction is given daily in divided doses for diarrhea and as an expectorant in acute bronchitis.

Decoction of Santan Roots – Use 3 gm of powdered roots in decoction. The decoction is given daily in divided doses for diarrhea, acute bronchitis and for nausea and hiccoughs.

The Indians also use the powdered root (1/2 to 1 gm) with a little water and siling mahaba (long peper, *Piper longum* L.) for diarrhea.

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Fig. 57 – Santan [*Ixora coccinea* L.], a common shrub 2-3 m high with pink, red or yellow flowers.

Fig. 58 – Rosal [*Gardenia jasminoides* Ellis], a shrub about 1 m high, commonly cultivated for its fragrant white flowers. Fruits are small, ovoid or ellipsoid, yellow with longitudinal ridges, maturing in November.

ROSAL (Fig. 58) *Gardenia jaminoides* Ellis

Rosal is not known to be a popular medicinal plant in the Philippines but it is discussed here because it has been found to have many uses in other countries, and also because it is such a common plant locally.

The fruit is the main medicinal part of the plant. Its chemical constituents include crocin (-gardenin), crocetin, mannitol and B-sitosterol. Crocin and crocetin are believed to be the main active constituents.

The most important use of rosal fruit is in jaundice. The fruit's anti-jaundice effect is due to several actions, as studied in experimental animals: it is a cholagogue (stimulates bile secretions by stimulation of contraction of the gall bladder) and it inhibits an increase in the bilirubin in the blood. The laboratory findings have been consistent and include studies by the Japanese and the Chinese.

Clinically, the fruit has also been shown to be anti-pyretic. The action may be due to a depression of the central nervous system as other studies also showed the fruit to have a sedative effect in experimental animals. The fruit is also used among patients with insomnia, particularly when the insomnia is due to illness.

Still another use of rosal is its anti-hemorrhagic property. It is sometimes used together with kogon for this purpose.

Rosal has been reported to have anti-fungal and anti-bacterial action, perhaps because of crocin, which is a yellow dye. In Japan, rosal is used as an anti-inflammatory and vulnerary.

SUGGESTED PREPARATIONS AND USES

Decoction of Rosal Fruit – Dried ripe fruits are used. The fruits usually appear from September to November. The *Chinese Pharmacopoeia* lists the dose as 6-9 gm of the fruit in decoction. It is recommended for jaundice. Externally, it is used for wounds, particularly to stop bleeding. Another external use is for hematomas. Other Chinese herbals list rosal for high fever associated with influenza, insomnia during or after illness, nephritis, dysuria due to urethritis and, bacterial dysentery. The most commonly cited uses are for jaundice and for various bleeding conditions (epistaxis, hematemesis, hematuria, etc.). A preparation using rosal fruits and kogon rhizomes has also been described for bleeding (page 4).

CONTRAINDICATIONS: Some Chinese herbals say that rosal should not be used in patients with diabetes.

Family RUTACEAE

This family includes the many citrus fruits whose uses are quite similar. Among those used medicinally in the Philippines are: kahel[1], dalandan[2], suha[3], dayap[4], kalamansi[5], kabuyaw[6], limon[7], kayumanis[8] and limonsito[9]. Since their chemical constituents and pharmacology are quite similar, they will be discussed together, according to constituents:

Volatile Oils –

All the citrus plants have volatile oils in their fruits and leaves The volatile oils are usually hydrocarbons (particularly limonene) together with terpenes (which vary with each plant and give each its peculiar aroma).

The volatile oil in these plants make them useful expectorants, carminatives, diaphoretics and anti-pruritics. The volatile oils also have varying degrees of anti-microbial activity.

[1] *Citrus aurantium* L.
[2] *C. nobilis* Lour.
[3] *C. grandis* (L.) Osbeck
[4] *C. aurantifolia* (Christm.) Swingle
[5] *C. microcarpa* Bunge
[6] *C. hystrix* DC
[7] *C. limon* L.
[8] *Clausena anisum-olens* (Blco.) Merr.
[9] *Triphasia trifolia* (Burm.f.)P. Wils.

Pectin

The rinds of citrus fruits are rich in pectin. In fact, the commercial production of pectin draws largely from the discarded rinds of citrus fruit. Pectin is an effective anti-diarrheal.

Acids

Citrus fruits contain various organic acids, mainly citric. Citric acid is an important intermediate in body metabolic cycles. It also increases urinary secretions. Like other weak acids,it is astringent. Together with the volatile oils, the acids in citrus juices exert a refrigerant (cooling) effect because of the varying degrees of sweating (diaphoresis) that they induce.

Ascorbic acid of vitamin C is another important constituent in citrus fruits. Many studies have been made on vitamin C as preventive for cold. Although the value of high doses of vitamin C remains a controversy, it is recognized that vitamin C has a vital role in regulating tissue respiration. A deficiency in vitamin C leads to scurvy, characterized by swollen and bleeding gums, loosened teeth, weakness, swollen joints, swelling of the feet and legs and gradual development of small hemorrhages around the hair and larger bruise-like hemorrhages. Bone shafts become prone to fracture and wounds take longer to heal.

During illness and other ailments involving tissue inuuries, the body's reserves of vitamin C are used rapidly, which is why additional vitamin C is prescribed during this period.

Kalamansi juice is often given in colds, partly because it is believed that the vitamin C content in the fruit would be of value. Actually, while the vitamin C content of kalamansi is comparatively high, percentage-wise, the small size of the fruit would require, according to one estimate, the juice from 39 pieces of kalamansi to fulfill the minimum adult daily requirement for the vitamin.

The other citrus fruits contain significant amounts of vitamin C and generally contain the recommended dietary allowance of vitamin C in 1-2 pieces of fruit.

Flavonoids

Flavonoids (yellow pigments) such as rutin, quercetin, hesperidin and naringin are present in citrus fruits. The exact role of flavanoids remains a controversy but they are said to act like vitamins, having an anti-oxidant effect. It has been claimed that citrus fruits are better sources of vitamin C than synthetic preparations because of the added presence of flavonoids in the fruits. The flavonoids are said to "protect" vitamin C. At one time, the flavonoids were called "vitamin P"

Citrus flavonoids have been reported to have anti-inflammatory, antibacterial and antifungal activity. There has been renewed interest in flavonoids because of reported anti-viral activity. Other flavonoids are also being studied for antifertility activiity.

Minerals

The pulp of citrus fruits are fair sources of calcium and phosphorus while the rinds carry very high levels of these minerals. The high calcium content and acidity of the rind make it easier for pectin to form precipitates, which is important in making jellies.

Potassium is another mineral found in high levels in citrus fruits. Its content is much higher in the rind than in the pulp. Potassium is an important element needed by the body but it is easily lost in diarrhea and vomiting. Because of this, it is important to add potassium to fluid preparations being used to rehydrate patients suffering from diarrhea or vomiting. The addition of a few pieces of the rind from citrus fruits in the rehydrating fluid will solve the problem of a potassium source.

Potassium is also responsible for the diuretic action of citrus fruits.

SUGGESTED PREPARATIONS AND USES OF THE CITRUS PLANTS

Fruit Juice – Citrus fruit juices can be given in colds and fever as a refrigerant and as a source of vitamin C. The fruit juices are also helpful as an astringent for sore throats. Externally, the same astringent action is sometimes helpful for skin disorders. The application of the undiluted juice for pimples is based on the astringent effect.

Fruit juice can also be used to flavor other drug preparations.

Rind – The rinds of ripe citrus fruits can be used in decoction for coughs, colds, indigestion and diarrhea. Gather the rinds and sun-dry. Store in whole pieces or cut into thin slices. The decoction can also be prepared using the rind with ginger – this is particularly helpful for nausea and vomiting. A few rinds added to rehydration preparations will provide potassium for diarrhea patients.

Leaves – A decoction of the leaves is used as a bath to induce sweating in patients with fever. Leaves of citrus plants are often mixed with other leaves containing volatile oils (e.g. mangga, sambong). The decoction are also of some value as a wash for skin sores and itchy conditions.

Fiber – The thread-like portion between the pulp and the rind can also be collected, dried and used in decoction for coughing and for general pains. About 3-5 gm of the fiber is used at a time.

Seeds – The seeds are also said to have pain-relieving effects. Place the seeds in container and add water (only a small amount). Store overnight then heat over a weak fire until the materials turn light yellow. Sun dry the material and crush before using. To use, prepare a decoction.

Alkaloids in the Family Rutaceae

A number of plants from this family contain powerful alkaloids .The most familiar one would probably be apdongkahoy (*Lunasia amara* Blco.), whose bark is used for diarrhea, stomach pains and as an antidote for snake-bite. Apdongkahoy contains a number of quinoline-based alkaloids with powerful physiological action. (One alkaloid, lunamarine, stimulated uterine contractions in experimental animals in a concentration of 1:200,000.)

Another plant is dawag [*Toddalia asiatica* (L.) Lam], the roots of which are used for stomach ache and as a febrifuge. An early study on Philippine samples of the plant found berberine in the roots. The *Philippine National Formulary* suggests chewing dawag leaves for dyspepsia.

The bark of kayetana [*Zanthoxylum limonella* (Dennst.) Alst.] is used for stomach ache and as an antidote to snake bite. The *Zanthoxylum* species of other countries have been found to contain berberine and other alkaloids.

Much more research can still be done on these plants, particularly with apdongkahoy, which is a fairly popular local medicinal plant. (Another Tagalog name of apdongkahoy is lunas, which means remedy.) A study of apdongkahoy made about 40 years ago found that two of its alkaloids exhibited positive toxic action on protozoal organisms. Several more alkaloids have been identified since then but the physiological activities have not been studied.

Family SAPOTACEAE

The gum chicle used for chewing gum comes from the latex of the trunk of tsiko [*Manilkara zapote* (L.) van Royen]. Gum chicle can be a substitute for guttapercha, which is used as a base for other drugs and as a dressing for wounds, particularly in dental surgery. The seeds, which contain an alkaloid, are used for fever but is said to be poisonous in large doses.

Kaimito or star-apple (*Chrysophyllum cainito* L.) is often used locally for diarrhea. The fruit's pectin and milky juice act mechanically as an anti-diarrheal. The bark, leaves and stems are also used in decoction for diarrhea, the anti-diarrheal principle being the high levels of tannin. Alkaloids have been found in the leaves and stem.

Family SIMARUBACEAE

The plants in this family are very bitter and many are used by folk healers for stomach ache, diarrhea, dysentery and as febrifuges.

Studies on the Simarubaceae plants have resulted in the identification of alkaloids and glycosides with significant antiprotozoal activity. These substances acts similarly to the drugs emetin (an alkaloid) and glaucarbuin (a glycoside). Both emetin and glaucarubin are, in fact, derived from plants.

There has been interest in a group of glycosides called quassinoids (simaroubolides) found in medicinal plants from this family. These quassinoids are lactones and were first identified in corales[1] (quassin and neoquassin). Corales has been listed in some pharmacopoeia – a 5% infusion of the bark, freshly prepared, is cited as an enema for threadworms. Infusions of corales are also used as lotions for pediculosis (lice infestations).

Many other quassinoids have been identified in plants belonging to this family. Besides corales, other medicinal plants from Simarubaceae found in the Philippines are mamigil[2], manunggal[3] and balaniog[4].

[1] *Quassia amara* L.

[2] *Harrisonia perforata* (Blco.) Merr.

[3] *Quassia indica* (Gaertn.) Nooteboom

[4] *Brucea javanica* (L.) Merr.

BALANIOG (Fig. 59)

Brucea javanica (L.) Merr.

Bogo-bogo, magkapayos, manongao-bobi *(Bis.)*; selte *(Yakan)*. Balaniog is the Chabacano name of the plant.

The fruit of balaniog contains glycosides. There have been varying reports on the chemical nature of the glycosides, with most literature mentioning three distinct glycosides. There has been controversy over the presence of alkaloids. One study reports the presence of an alkaloid yatanine. The seeds contain 60% fixed oil, which is used for treating warts.

Balaniog is most effective as an amoebicide. It also has some anti-malaria properties but the action is weak and ineffective for subtertian and quartan malaria. There have also been reports on the use of balaniog in schistosomiasis in the early stage. Balaniog's antiprotozoal activity is attributed to the glycosides.

Balaniog is used externally to treat trichomoniasis (vaginal) and various fungal infections.

SUGGESTED PREPARATIONS AND USES

Fruits – The fruits can be taken for amoebic dysentery. It can also be tried for tertian malaria and for schistosomiasis. Because the fruits can irritate the gastro-intestinal tract, it is advisable to powder the fruits and enclose in gelatin capsules. The patient should chew the fruits very well if the fruits are taken as is.

The usual dose is 10-15 pieces of the fruit for adults. For children, give one piece of the fruit for each year of the child's age, total dose not to exceed 10 pieces. The fruits are given 3 times daily (10-15 each time). For dysentery, treatment should be continuous for 7-10 days. For tertian malaria, 5-7 days of treatment is used. For schistosomiasis, treatment covers 40 days.

The official Chinese Pharmacopoeia lists a dose of 0.5-2.0 gm dried seeds given three times daily. This is about 12-50 seeds for each dose.

Seeds – The seeds can be used for the conditions above. It is also advisable to powder the seeds and enclose in gelatin capsules. The dose for the seeds is 15 at a time, given 3 times daily.

Decoction of Seeds – A decoction of the seeds is used externally for vaginal trichomoniasis.

PRECAUTIONS: Balaniog is contraindicated in pregnant women. Side reactions from balanoig include nausea, vomiting, diarrhea and dizziness. When these signs appear, reduce the dose. The gastro-intestinal signs are usually due to irritation and can be prevented by enclosing the fruits or seeds in gelatin capsules.

MANUNGGAL (Fig. 60)
Daraput, linatog-anat, linton-gamay, mabingdato, palag(ar)ium, ponoan (Bis.)

Quassia indica (Gaertn.) Nooteb.
Syn. *Samadera indica* Gaertn.

Manungal is a tree whose seeds are often used for fever in the Philippines and in other Asian countries. The seeds contain fixed oil, an alkaloid and the glycoside samaderin. Its pharmacology has not been studied.

SUGGESTED PREPARATIONS AND USES

The Philippine National Formulary lists the following preparations:

Decoction of Manunggal Bark – The decoction is used for fever.

Seeds – For rheumatism, the seeds are roasted, pound and applied on affected areas.

Leaves – Bruised leaves are suggested as a poultice for skin eruptions.

Fig. 59 – Balaniog [*Brucea javanica* (L.) Merr.] is a hairy shrub found in thickets, reaching a height of 3 m. Flowers are small and reddish while fruits are oval, black and smooth, resembling papaya seeds in size and shape.

Fig. 60 – Manunggal [*Quassia indica* (Gaertn.) Nooteb.] is a tree that grows up to 10 m high with numerous light yellow flowers. Its fruits are flattened and keeled, about 6 cm. long and 2.5 cm. wide.

Family SOLANACEAE

The name of this family is derived from the Latin *solor* which means 'to heal'. Several of the members of the family were popular in Western medicine and many continue to be of value.

The sili peppers[1] for instance, contain volatile and fixed oils as well as alkaloids. They stimulate the appetite by increasing, salivary and gastric secretions. Externally, they are used as rubefacients in rheumatism and muscular pains. Their effect is mainly of irritation and they should not be taken in large amounts or applied on the eyes and on skin with open wounds or sores. The fruits and leaves of sili are rich in vitamin A, calcium, iron and phosphorus.

Kamatis or tomato[2] is valued by Western practitioners of homeopathic medicine as a "mild aperient (laxative), promotor of gastric secretions and blood purifier." An alkaloid with antibiotic activity, tomatine, was isolated many years ago from tomato but its activity is comparatively weak. It has been found, however, that tomatine is reasonably effective against some fungi that cause skin diseases. Tomatine has also been reported to have antihistamine activity. The dried pulp

of tomato can be mixed with the juice of pectin-rich fruits and used for diarrhea and bacillary dysentery. The fresh pulp can also be tried as poultice in dermatitis. Tomatine is found mainly in the leaves and unripe fruits.

Tomatine is only one of several steroidal alkaloids that are being studied. Many members of *Solanaceae* contain these alkaloids. These alkaloids can be toxic, as in the case of solanine, which is found in the leaves and tubers of lubi-lubi[3] (kama-kamatisan), in the leaves and green exposed parts of potato[4] and in the leaves of talong or eggplant.[5] Some of these substances are hemolytic while others (glycosides) act on the heart and nervous system.

Yet, many of these plants are edible – lubi-lubi, known as amti in the northern provinces, is a common weed that is also used as a vegetable. Medicinally, these plants also have their uses. The *Philippine National Formulary* includes a decoction of lubi-lubi leaves for skin ulcers, wounds and irritations. The *Chinese Pharmacopoeia,* cites lubi-lubi as a diuretic, at a dose of 9-30 gm. of the entire plant (dried) in decoction.

Both the alkaloids and glycosides of *Solanaceae* are of interest to researchers because they are potential cardiovascular and anti-cancer drugs. Extracts of lubi-lubi, for example, have shown central nervous system depression, decreased cardiac activity, hypotensive,analgesic, antibacterial and antispasmodic activity. Lubi-lubi also contains diosgenin, which is anti-inflammatory.

Two other plants from this family are familiar to many Filipinos. They are discussed below:

[1]Two species are usually cultivated in the Philippines – sili [*Capsicum annuum* L.] and siling labuyo [*Capsicum frutescens* L.].

[2]*Lycopersicon lycopersicum* (L.) Karsten
[3]*Solanum nigrum* L.
[4]*Solanum tuberosum* L.
[5]*Solanum melongena* L.

TALUMPUNAY (Fig. 62) *Datura metel* L.

Kamkamaulau *(Ilk.);* katchubung, katiabon, tatchubong *(Bis.)*

Talumpunay contains the powerful belladonna alkaloids, mainly scopolamine (hyoscine), hyoscyamine and atropine (dl-hyoscymine). The belladonna alkaloids act similarly but there are some important differences:

Central Nervous System – Scopolamine, which is present in larger quantities than hyoscyamine in talumpunay. depresses the central nervous system. It causes drowsiness, a light feeling and eventually, dreamless sleep. The ancient Aztecs in South America, who had developed a fairly advanced medical system, were known to use *Datura fastuosa* to put their patients to sleep for

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Fig. 61 – Lubi-lubi [*Solanum nigrum* L.], a weed that grows up to 1 m. with tiny white flowers and dark purple or black round fruits.

Fig. 62 – Talumpunay [*Datura metel* L.], a shrub growing up to 2 m, found wild but also cultivated for its white or purplish flowers. Fruits are about 3.5 cm in diameter, covered with short, stout spines.

surgery. Scopolamine extract continues to be used as a tranquillizer in the West and in China, it is used as an anesthetic. Scopolamine also has anti-tremor activity and has potential use in treatting parkinsonism.

Taken in large doses, scopolamine causes excitement, restlessness, hallucinations and delirium.

Eye – Both scopolamine and hyoscyamine will cause the pupil to dilate (widen) although hyoscyamine has a more powerful action. Atropine (dl-hyoscyamine) is still used in opthalmic preparations used to dilate the pupil. Both scopolamine and hyoscyamine increase the pressure within the eye and are therefore contra-indicated in persons with glaucoma.

Respiratory System – Both alkaloids inhibit (prevent) secretions of the nose, mouth, pharynx and bronchi. They also dry the mucous membranes in the respiratory tract because of their inhibitory action on secretion. The two alkaloids are also bronchodilators and are particularly useful for asthma. A proprietary preparation for asthma, still available in drug stores, uses powdered *Datura stramonium* as its main ingredient.

Gastro-Intestinal Tract – Both alkaloids decrease movements of the gastro-intestinal tract. Because of this, the two aklaloids are still widely sued in antispasmodic preparations.

SUGGESTED PREPARATIONS AND USES

Dried Talumpunay Leaves or Flowers – The dried leaves or flowers can be dried and rolled like tobacco and smoked as cigarettes for asthma. It should be used as soon as an attack starts. The flowers are stronger than the leaves and one dried flower is usually more than enough to bring relief. With the leaves, one to three pieces would be sufficient. The leaves or flowers can also be mixed with alagaw (page 72), sambong (page 28) and/or suob-kabayo (page 41). The mixture can be dropped on live coals or burned for inhalation during asthma attacks or in conditions where a bronchodilator is needed. The *Philippine National Formulary* suggests that the user should not have more than one talumpunay cigarette in 6 hours.

Decoction of Talumpunay Leaves or Flowers – Use 1 gm. dried or 2 gm. fresh leaves (about one leaf) in decoction for diarrhea or stomach ache. The *Chinese Pharmacopoeia* lists a dose of 0.3 to 0.6 gm. of dried flowers in decoction as an anti-tussive. The daily dosage should not exceed 1.5 gm.

Poultice – Pound a few fresh leaves and mix with a little water and a starchy base (gawgaw, kanin, etc.). Apply on boils, painful joints and muscles.

Datura Oil – An oil preparation made by soaking the leaves in coconut oil. The oil is used externally for rheumatism and muscle pains.

PRECAUTIONS: Talumpunay should be used with great caution. Do not exceed the doses listed. Even when used as a cigarette or inhalant, talumpunay can have very potent effects.

CONTRAINDICATIONS: Deabilitated patients should not be given talumpunay. It should also be avoided by the pregnant and by people with glaucoma, heart trouble, hypertension, liver or kidney trouble.

Accidental poisoning sometimes occurs, particularly with children. Keep the seeds and flowers well stored. Of course, plants in gardens and waste places cannot be kept out of children's reach, and there have been instances when health workers were unable to establish the cause of certain types of poisoning which might have been due to Datura. Signs of poisoning include excessive drying of the mouth and throat, dilated pupils, blurring of vision, flushing in the face, fever, increased heart beat, inability or difficulty with urinating. Because of the presence of scopolamine, other signs of poisoning include restlessness, confusion and coordination, followed by hallucinations and delirium.

TREATMENT: Treat symptomatically – reduce body temperature, moisten mucous membranes and catheterize (urethral) if possible. Gastric lavage with charcoal or 1:10,000 potassium permanganate is also helpful.

NOTE: There is a very common shrub grown in Baguio and other areas in the north. The shrub is called "trumpet flower" by the residents and the flower is exactly the same as talong-punay except that they are much larger. This plant is also a member of *Solanaceae* and it contains the same alkaloids as talumpunay . The plant's scientific name is *Brugmansia suavolens* Humb. and Bomsl. [Syn. *Datura candida* Pers.]. Other *Datura* species are cultivated by botanical gardens and research institutes.

TABAKO *Nicotiana tabacum* L.

Tabako's physiological effects are due mainly to nicotine, found in the leaves of the plant in levels ranging from 0.5 to 3.0%. Nicotine has been found to be one of the cancer-causing substances in cigarettes.

The effects of nicotine are generally excitatory. The central nervous system is stimulated and in over-doses, nicotine producers tremors and convulsions. Respiration is stimulated in smali doses. In the gastro-intestinal tract, nicotine stimulates movements of the intestinal tract but in high doses the movements actually decrease. In the cardiovascular system, nicotine increases heart rate, blood pressure and cardiac output. Nicotine is a vasoconstrictor.

Strickly speaking tabako would have little or no therapeutic value, except perhaps as a styptic for wounds. However, it is so much part of local cultures (especially in tobacco-producing regions) that medicinal uses are inevitably attributed to it. As long as the uses are external, there would be no harm in the continued use of the plant.

Tabako also has insecticidal properties which could be put to good use (e.g. crushed leaves in decoction as a spray, burning dried leaves).

Family STERCULIACEAE

Kalumpang [*Sterculia foetida* L.] is a common tree found along the seashore and river banks. It has large fruits with kernels which yield an oil that is laxative. A decoction of the leaves can be used as a wash for skin eruptions.

Kakao [*Theobroma cacao* L.] is cultivated for its seeds, which are used for manufacturing cacao, cacao butter, chocolate. Cacao butter is used pharmaceutically to coat pills and prepare suppositories. Like coffee, it contains xanthines (theobromine and caffeine). Theobromine's action is similar to, but weaker than caffeine when it comes to stimulation of the central nervous system. However, theobromine has stronger action as a smooth muscle relaxant, as a diuretic, as a cardiac stimulant, and as a vasodilator and as a coronary dilator. There are proprietary preparations using theobromine combined with other drugs for cardiac disorders. The roots of kakao (2 tablespoonful or about 10 gm) are used in decoction as an emmenagogue in folk medicine but its effectivity has not been evaluated.

Roasted kakao seeds can be pound and applied on dry skin and dry eczema.

Family TILIACEAE

Saluyot [*Corchorus olitorius* Lam.] and datiles [*Muntingia calabura* L.] belong to this family. Saluyot is very closely related to pasau-na-bilog or jute [*Corchorus capsularis* L.]. Both have stems which yield strong fibers. Rice sacks were often made from jute. This same fiber, corded finely, is said to make good surgical dressing. Another use of pasau-na-bilog is medicinal charcoal. The bark is, in fact, used in folk medicine for stomach ache.

But the use of pasau-na-bilog in stomach ache probably goes beyond mere adsorptive action. The leaves and seeds of both saluyot and pasau-na-bilog have been found to yield glycosides, main-

ly corchorin (? strophanthidine according to a Pakistani report) which has digitalis-like action on the heart. The glycoside is about 0.5% of the weight of the seed. The seeds are sometimes used in different regions in Asia as a febrifuge.

These plants hold potential in medicine if the glycosides could be further studied. One report observes that strophanthidine could be converted into valuable hormone products.

Family UMBELLIFERAE

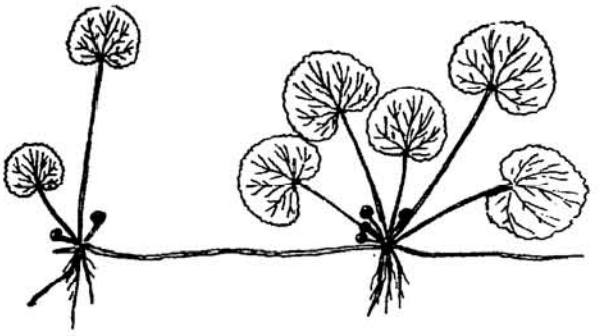


Fig. 63 Takip-kohol [*Centella asiatica* (L.) Urb.], a common weed found usually in damp areas, 3 to 15 cm long with tiny white or green fruits. The leaves are 2 to 5 cm. wide and are kidney-or heart-shaped.

This family is composed of aromatic herbs, many of which are used as vegetables and condiments. Several of these also have medicinal uses.

TAKIP-KOHOL (Fig. 63) *Centella asiatica* (L.) Urb.
Hahanghalo, yahong-yahong *(Bis.)*

This very common weed is one of those medicinal plants with a cure-all reputation. It has been reported to be used as a tonic, stimulant, diuretic, antidysenteric, antidiarrheic, hypotensive, cicatrizant and even as an anti-gonorrhea drug. One local commercial preparation advertises takip-kohol as its main ingredient and claims the plant is noted in China for promoting long life.

While all these claims need to be further evaluated, it has been established that the plant contains many chemical constituents which probably act together to promote many of its claimed effects. Proteins up to 17.25% have been found. Pectin and various reducing and non-reducing sugars are also present. A volatile oil, about 1% of the plant, contains vallarine, which was formerly speculated as the main medicinal component but further studies showed the plant to have abundant vitamin B, calcium, phosporus, iron and other minerals, all of which have their own medicinal value. High tannin levels were also established to be present

Two glycosides with antibiotic activity have been reported. One of these glycosides, asiaticoside, has been used as a preparation for leprous ulcers and slow-healing wounds. Chinese researchers have reported that takip-kohol was effective in the treatment of peptic ulcers induced in experimental animals.

Traditional Chinese medicine characterizes the plant as "antipyretic, anti-inflammatory and diuretic." The Indians theorize that the drug may be valuable as a stimulant to cutaneous circulation.

Locally, community based health programs have been using the plant decoction to reduce edema due to schistosomiasis.

SUGGESTED PREPARATION AND USES

Plant Decoction – Use 15-60 gm fresh material or 30-60 gm dried material. The decoction can be used for upper respiratory tract and most acute infections and purulent inflammations. As a diuretic, use 60 gm fresh material in decoction twice daily.

External Uses – Use fresh crushed material for eczema, skin ulcers, bruises.

OTHER MEDICINAL PLANTS FROM UMBELLIFERAE

Anis [*Foeniculum vulgare* Gaertn.] – Anis or fennel contains volatile oil, fixed oil and pectin in its fruits. The *Philippine National Formulary* suggests its use for fainting (inhaling crushed fruit) and for gas pains (an infusion of the fruit). The *Chinese Pharmacopoeia* classifies anis as a pain-killer and suggests a dose of 3-9 gm. of the dried fruit in decoction. The decoction is used for stomach ache, dysmenorrhea and pain in the testes. It is also cited for use in early stages of schistosomiasis.

Carrot [*Daucus carota* L.] – Carrots are known mainly for their tap roots, a vegetable rich in vitamin A. Among the Chinese, the fruit (different from the tap root) is considered medicinal. The *Chinese Pharmacopoeia* includes the dried ripe fruit, 3-9 gm. in decoction, for chronic dysentery and as an anthelmintic (roundworms or *Ascaris*).

The fruits contain volatile oil composed of asarone, bisabolene, asarylaldehyde, tiglic acid and sterols.

Kintsay [*Apium graveolens* L.] – Kintsay or celery is a popular folk remedy for hypertension. It contains volatile oil, apiin (a glucoside) and various sugars.

A Thai study found an extract of kintsay to have hypotensive and diuretic effects.

The *Philippine National Formulary* lists the following uses for kintsay: emetic (decoction of entire plant), bronchodilator in asthma (pound seeds, wrap in thin cloth and inhale) and high blood pressure (eat as vegetable).

Family **VERBENACEAE**

64

65

Fig. 64 – Alagaw [*Premna adorata* Blco.] a small tree 3-8 m high with greenish-white or white flowers and dark purple, fleshy fruits.

Fig. 65 – Lagundi [*Vitex negundo* L.], a shrub 2-5 m high, growing wild in thickets and waste places. Its leaves are compound, with 3 or 5 leaflets. Flowers are blue.

ALAGAW (Fig. 64) *Premna odorata* Blco.
Anobran *(Ilk.);* abgau, adgau, agbau, argau *(Bis.)*

Alagaw is widely used in the Philippines as an expectorant. Its action is due mainly to the volatile oil in the leaves (about 0.02%)., although the plant has also been found to have some sedative action when used in experimental animals.

An alkaloid, premnine, has been isolated from *Premna integrifolia* and the picrate of this alkaloid is sympathomimetic(i.e. with actions similar to the sympathetic nerves, which includes stimulation of the sweat glands, dilation of pupils, dilation of muscle arteries, suppression of activity of digestive organs, increased heart rate).

SUGGESTED PREPARATIONS AND USES

Decoction of Alagaw Leaves – A decoction is prepared from 2 or 3 leaves (6-9 gm fresh or 3-6 mg dried). It can be used for coughing and other upper respiratory disorders, as well as a calmative for palpitations and nervous conditions.

LAGUNDI (Fig. 65) *Vitex negundo* L.
Dangla (*Ilk.*)

Lagundi is commonly used for wounds, fever, stomach ache and dysmenorrhea. Seeds boiled in water are believed to prevent the spread of toxins from poisonous bites of animals. Some farmers use fresh lagundi leaves with their rice and corn as an effective repellant to insects.

The plant contains alkaloids (one, nishindine, has been characterized), tannin and volatile oil. Clinical trials have established lagundi to be antipyretic and antitussive. Researchers from the Philippine General Hospital, report that lagundi has had favorable effects even in patients with chronic obstructive pulmonary disease, including those who were not responding to other drugs. Changes in sputum quality were also noted, indicating that lagundi has anti-infective properties.

An earlier local study on experimental animals reports that lagundi extracts stimulated bronchial secretions. In China, lagundi is used for respiratory ailments, particularly chronic bronchitis. Lagundi's effectivity has been so well established that the Chinese now extract its volatile oil for processing into tablets, syrups, injections and aerosols.

SUGGESTED PREPARATIONS AND USES

Decoction of Lagundi Leaves – Use 5-6 dried leaves or 8-10 fresh leaves. Boil for 15 minutes in one glass of water. Repeat this dose every four hours for 3-14 days. The decoction can be used for fever, coughing and other respiratory infections. Externally, a decoction of lagundi can be used as wash for dermatitis, scabies, wounds and skin ulcers.

OTHER MEDICINAL PLANTS FROM VERBENACEAE

Kasopangil [*Clerondendron intermedium* Cham.] – Kasopangil is sometimes used as a poultice for headaches and other body pains. Saponin, peroxidase and formic acid have been found in the leaves.

Lantana [*Lantana camara* L.] – The roots of lantana are occasionally used as a gargle and wound wash, because of the tannin content. The plant has been reported to contain an alkaloid, lantanine, which is antispasmodic and antipyretic. The leaves' strong odor is due to volatile oil. In animals, lantana causes photosensitization and hepatic damage. It is not known if these same effects occur in human beings.

The *Philippine National Formulary* lists a decoction of the bark or infusion of the leaves for fever. It also suggests the use of the leaves for rheumatism – spread oil on the leaves, warm over a low flame and apply on affected parts. The leaves are also listed as a poultice for wounds and contusions.

Tigaw [*Callicarpa candicans* (Burm.) Hochr.] – Tigaw leaves are smoked to relieve breathing in asthma while the fresh leaves are applied externally for stomach ache. Saponin is present in the leaves and stem, as well as traces of alkaloid, tannin, amygdalin and calcium oxalate.

ADDENDUM

Family APOCYNACEAE

Tagulaway [*Parameria laevigata* (Juss.) Mold.] is a vine whose bark is used, together with coconut oil, to make "Balsamo de Cebu." This oil is used as a vulnerary and cicatrizant (promoting scar formation). The bark material has been found to be high in tannin and so its action is mainly astringent.

Family LEGUMINOSAE

Kabalyero [*Caesalpinia pulcherrima* (L.) Sw.] – Kabalyero is not too widely used in the Philippines, except in the Ilocano region, where it is sometimes used as a purgative and emmenagogue. Farmers also report cases of their animals aborting after eating the leaves. Reports on the plant's chemical constituents are piecemeal (red coloring matter, gum, tannin, resins, benzoic acids) but there is a local report observing that the plant stimulates contractions in the intact gravid (with fetus) uterus. The plant also produces convulsions in toxic doses and its use is not advised in patients with cardiac trouble and in cases of eclampsia (convulsions during and after pregnancy).

Kalumbibit [*Caesalpinia crista* L.] – The seeds of kalumbibit are sometimes used locally as a mild purgative and febrifuge. Three bitter principles (glucosides) have been reported present – alpha, beta and gamma caesalpin, together with sugar, simple proteins and an oil. The seed's antipyretic effect is attributed to a glucoside bonducin. An overdose causes vomiting.

Kupang [*Parkia roxburghii* G. Don.] is a large tree with edible pods. The seeds contain glycosides, resin and tannin and are antidiarrheal.

Narra [*Pterocarpus indicus* Willd.] has high tannin levels in its bark. It also has a gum which is called "kino." Kino's main constituent is kino-tannic acid, which is also astringent. In Malay traditional medicine, the bark in decoction or the kino is used for diarrhea.

Family RHAMNACEAE

The bark and leaves of mansanitas *(Zizyphus jujuba* Mill.) are frequently used in decoction for diarrhea. The anti-diarrhea effect is due to the tannin content.

The fruit is used in other countries as an aid to digestion. The fruits contain sugar, mucilage, fruit acids, (including an unusual acid called ziziphic acid). Ziziphic acid is also said to be present in the bark and is found together with the tannin to form ziziphotannic acid.

The fruit, used with luya (ginger), is said to improve digestive absorption. The mansanitas-luya combination is used to improve utilization of other drugs for digestive disorders. There has

also been a report that a decoction of mansanitas with kintsay (celery, *Apium graveolens* L.) could lower blood cholesterol.

The fruit is acid and astringent but cultivated varieties are sweeter. It is a good source of calcium, phosphorus, iron and vitamin C. The fruit should not be eaten if a person has gas pains, constipation.

Family **RUTACEAE**

Kamuning [*Murraya paniculata* (L.) Jack.] is a popular medicinal plant in Asia, mainly because of its high tannin levels. The bark and the leaves are used as astringents, particularly for diarrhea. The leaves also contain a glycoside called murrayin.

APPENDIX I
SIMPLE WEIGHTS AND MEASURES

The use of weights and measures has its value not just for medicinal plants but in explaining doses of drugs in general, Western or indigenous. Learning to use weights and measures will be valuable in systematizing local uses of medicinal plants. For instance, it would be good to be able to record the results obtained with different measured amounts of plants being used by the people.

MEASURES OF CAPACITY (VOLUME)

Measures of capcity refer mainly to the quantity of liquid. Under the metric system, the basic unit to measure capacity is the milliliter, abbreviated as "ml". The milliliter is the same as the cubic centimeter (abbreviated as "cc"). One thousand millititers make one liter (L.).

Different sizes of graduated cylinders – glass tubes with markings – are available in scientific supply stores and are a great aid for measuring liquids. However, improvisations can be made using other materials:

Syringes and Dextrose Bottles – You can ask your Rural Health Unit, doctors or nurses for used disposable (plastic) syringes. These are marked off according to "cc", which is the same as the milliliter. Syringes are available in different sizes, from the tuberculin syringe (1 cc or ml) to those as large as 60 cc or ml.

Used dextrose bottles are also marked according to milliliters and are available in different sizes.

In using these materials, make sure to wash them thoroughly before using. If possible, have them boiled.

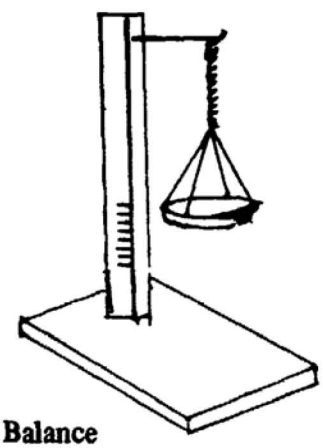
Cups (Tasa) and Glasses (Baso) – The standard cup (about 10 cm in diameter at the brim and 6-1/2 cm high) takes in 125 ml of water (if filled up to about 2 cm from the brim). The small sized tumblers (about 10-1/2 cm high) in which commercial coffee is sold are commonly used as glasses. These also contain 125 ml of water if filled up to 2 cm from the brim.

Spoons – Spoons can be used for small measures and for calculating the dose of a prepared solution. A teaspoonful (but not overflowing) of liquid is about 5 ml while a tablespoonful of liquid is about 10 ml.

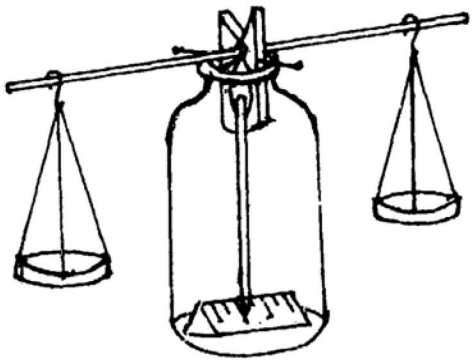
MEASURES OF WEIGHT

In the metric system, the most common measures of weight are the milligram (mg), the gram (g) and the kilogram (kg). One thousand milligrams make one gram while one thousand grams make a kilogram.

Special balances are needed to measure milligrams and these minute amounts are used only when purified extracts are employed. For grams and kilograms, simple weighing devices can be improvised. A few examples are given below.*



A. Spring Balance



B. Beam Balance

*The designs for the improvised balances are adapted from *UNESCO Source Book for Science Teaching*, 2nd ed., Paris: UNESCO, 1971.

Spring Balance – A simple spring balance can be constructed by punching four holes in an old tin lid with a nail, spacing them equally around the circumference. Pass pieces of string through these holes and tie them together. Attach this "scale pan" to a spring hung from a nail. Put objects whose weights are already known (See discussion below on standard weights) and mark off the weight on the supporting stick opposite the edge of the pan.

Beam Balance – The beam of the balance is made by passing a knitting needle or any straight piece of wood (try stem of tambo) through the hole in the spring of the clothes peg. The beam should project equally on either side of the clothes peg. The clothes peg grips a pencil which will be an indicator of whether or not the pans are balanced. Two needles or pins are placed one on either side of the clothes peg and act as the pivots of the beam. The pans are constructed from two bottle lids of the same size. As with the spring balance, the lids are punched with holes and thread of string is passed through the holes and tied together to form a loop from which they can be suspended from the beam. Once the scales are balanced, it is advisable to make a nick with a file on the beam to prevent the loops from slipping off.

The principle of a beam balance is quite simple and modifications can be made. A very crude balance, for instance, can be constructed using a piece of stick, string and leaves (for the "pans"). Of course, a certain degree of accuracy would have to be sacrificed.

In using the beam balance, standard or known weights are placed on one pan and the drug material on the other. For instance, if 5 gm of the drug material is needed, use known weights of 5 gm on one pan and then add drug material on the other pan until the scales are balanced.

STANDARD WEIGHTS.

Coins can be used as weights. The old 1-sentimo coins (round, series of 1969-1975) each weigh 0.6 gm. The new 1-sentimo coins (square) are 1.4 gm each. The weights of other coins are as follows: 5-sentimo (old or new) – 2.5 gm, 10-sentimo (old or new) – 2.1 gm; 25-sentimo (old or new) – 4.3 gm; P1 (new) – 9.7 gm; P1 (old) – 14.6 gm.

Softdrink bottlecaps (tansan) each weigh 2.5 gm. Other materials commonly found in the house can be tried. High schools or colleges in your areas may have the facilities to weigh these materials.

APPENDIX II
COMMON DRUG PREPARATIONS

Drug preparations that can be made in the barrio are described below. Tablets and pills have not been included here. Although there are simple methods to prepare tablets and pills, these are not described here because these preparations should be contain a standard amount of the active principle.

Observe general rules of sanitation when preparing drugs. Decoctions and infusions should be used the same day they are prepared. For preparations which can be stored, always make sure to label the containers. Include precautions and contra-indications on the label.

The *Philippine National Formulary* suggests the use of earthenware containers (palayok) for preparing medicinal plants and advises against plastic and metal containers. Western practitioners of homeopathic medicine are also against the use of metal containers, supposedly because the metals may react with the medicinal plants.

DECOCTIONS – Decoctions are prepared by boiling the medicinal plants in water. Usually, 5 gm of the drug material is used for every 100 ml of water. If weighing devices are not available, a rough guide is to use three handfuls of fresh or one handful of dried plant material for every two cups (tasa) of water.

The plant materials are boiled for 15-45 minutes. Plants with volatile oils need a shorter period of boiling (15 minutes). For other materials, boil until the liquid is reduced to about half of the original volume. After allowing the solution to cool, the liquid is strained through katcha

(cheesecloth) or any other suitable material to remove solid residues. More water can be added to dilute the preparations.

INFUSIONS – Infusions or teas are similar to decoctions except that the plant materials are not boiled with the water. Instead, previously boiled water is poured over the plant material. After pouring the boiling water over the plant material, the mixture is allowed to stand for 15-30 minutes. Allow the solution to cool down and then strain. The plant material can be pressed again to remove more liquid which can be added to the rest of the infusion.

The proportion of drug material to use is the same as that given for decoctions.

Infusions are preferable when preparing aromatic medicinal plants because the relatively short exposure to heat minimizes the loss of the volatile oils. Infusions are also used for preparing flowers and leaves which are easily destroyed by strong heat.

TINCTURES – Tinctures are prepared from drugs that may contain gummy resins or other substances that do not readily dissolve in water. They are also used for preparing drug materials to be used externally as a wash. Instead of water, alcohol is used; the proportion being one part of the dried or fresh plant material for every 5 parts of alcohol (e.g. 20 gm plant material in 100 ml alcohol). For more potent drugs, the proportion is reduced to 1:10.

The plant materials are placed in strong alcohol (80-90%) and kept in air tight containers. Do *not* use rubbing alcohol if the tincture is to be taken internally. It is safer to use alcoholic beverages such as tuba. The mixture is stirred or shaken at least once a day for a week before using. Strain the solution before actual use.

SYRUPS – Syrups are prepared particularly for drugs which taste unpleasant and may be difficult to administer to children and infants. The base is prepared by dissolving 1 part brown sugar for every 2 parts water. Boil the sugar in the water until the sugar is dissolved. After the sugar dissolves, apply more heat for a few minutes. Allow the solution to cool down befoer straining. Add water again after straining.

Prepared decoctions of the needed drug (s) can then be added to the syrup in a 1:1 proportion (e.g. 100 ml of a prepared decoction with 100 ml of the syrup).

Add 2.5 gm sodium benzoate as preservative for every liter of the mixture.

Honey – Honey can be used as a syrup base instead of sugar and water. Honey is itself considered a medicinal preparation because of its nutrients.

Fruit Syrups – Fruit syrups add more flavor than plain sugar solutions.

Soft seedless fruits are preferable. The fruits are washed with warm water and mashed to a pulp. The material is placed in a closed container in a warm place and allowed to ferment for 3-4 days. Extract the juice and then set aside for another 2-3 days to complete fermentation. Fermentation can be hastened by adding a little sugar to the crushed fruit. To determine if sufficient fermentation has taken place, take a small amount of the juice and mix with two volumes of 90% alcohol. The juice should remain clear. If there are precipitates, it would mean that pectin is still present and additional fermentation will be needed.

After sufficient fermentation, the juice is mixed with sugar (5 tablespoonfuls for every 100 ml of the juice) and heated to dissolve the sugar. Strain the solution and while still hot, the syrup should be poured into sterilized bottles.

Storing Syrups Without Chemical Preservatives – Use bottles with a capacity of less than 500 ml. Clean the bottles thoroughly and keep warm by immersing in hot water until ready for use. Strong corks are also kept ready, soaked in hot distilled water.

The syrup should be heated to boiling point (strained, if necessary, and reheated). Pour the syrup into the hot bottles until the brim and insert the cork with force. While the neck of the bottle is still hot (and before the syrup can contract in volume through cooling), dip the neck

in melted paraffin. Organisms are destroyed by heat and no air, which would contain new contaminants, can find its way into the bottle.

POULTICES AND CATAPLASMS – The leaves of plants are often applied directly to the skin for headaches and other body pains. This method can be improved on by preparing cataplasms or poultices.

Plain rice starch (i.e. cooked rice) can be boiled with water until a thick solution is formed. This is poured on a piece of cloth to form a layer about 1/2 inch thick. The drug material is then incorporated and the poultice is applied, while still warm, on the affected area. Gawgaw can also be used. The proportion is usually 1 part of starch with 10 parts water.

For skin inflammations, including those with "weeping lesions" (wet sores), it has been reported that the simple starch poultices can be a very safe, yet efficient, remedy. If there is infection, a little boric acid powder or antibiotic cream can be added to the poultice. Change the dressing every 4 hours.

Many plants yield fixed oils from their seeds. These oils can be used as a base for poultices. Coconut oil is the most popular example. The oils are particularly useful for disorders involving drying of the skin.

The plant material should first be crushed and heated with the oil. The mixture is then filtered and the oil applied on the skin.

In some areas, "ointments" are being improvised by combining both oil and starch. The usual combination is gawgaw (cassava starch) mixed with coconut oil. Others use arina (flour) and coconut oil. Cooking oil has also been suggested but this is too greasy and tends to carry a disagreeable odor.

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GLOSSARY AND INDEX OF MEDICINAL PROPERTIES

Due to space limitations, only the more important medicinal properties are indexed. Numbers refer to the page where the particular plant is discussed.

ANALGESIC: relieves pain. Usually restricted to drugs which relieve general body pains or headaches by depressing an area in the brain without causing sleep or drowsiness.
Syn. Anodyne, sudorific Also see ANTI-INFLAMMATORY, ANTIPYRETIC, COUNTER-IRRITANT, DEPRESSANT
Anis – 71
Bitaog – 38
Citrus – 64
Dapdap – 44
Dilaw – 15
Gogo – 44
Kape – 60
Lubigan – 1
Lubi-lubi – 67
Luya-luyahan – 15
Moras – 54
Mutha – 2
Talumpunay – 68

ANTHELMINTIC: expels intestinal worms.
Syn. Dewormer, vermifuge
Also see TAENIFUGE
Abutra – 53
Banato – 36
Boto-botonisan – 30
Carrot – 70
Corales – 65
Ipil-ipil – 47
Isis – 54
Kasoy – 17
Lansones – 52
Makabuhay – 53
Niyog-niyugan – 25
Papaya – 24
Paraiso – 52
Pinya – 2
Yerba buena – 41

ANTIBACTERIAL: kills or prevents the growth of bacteria. Plant antibacterials are generally mild and are used for treating wounds to control or prevent infection. Some may be useful in treating diseases caused by bacteria, e.g. dysentery. Also see ANTISEPTIC
Abukado – 42
Abutra – 53
Akasya – 47
Akapulko – 43
Ampalaya – 34
Bawang – 8
Bayabas – 55
Bulak-manok – 30
Dila-dila – 29
Granada – 60
Gulasiman – 59
Kalatsutsi – 19
Laneteng-gubat – 19
Lubi-lubi – 67
Lubigan – 1
Luya – 14
Makabuhay – 53
Mutha – 2
Rabanos – 33
Rosal – 62
Sampalok – 45
Tayuman – 48
Tunkin – 32

ANTIDIARRHEAL: reduces loose bowel movements either by adsorbing excess water or by mixing with the intestinal contents to make it more solid. Other plants stimulate secretions to help digest food (See CHOLAGOGUES). Certain ANTIBACTERIAL and ANTIPROTOZOAL plants will treat diarrhea by attacking the cause of the diarrhea, as in the case of bacterial or amoebic dysentery. SPASMOLYTICS are also anti-diarrheal because they reduce intestinal movement. The plants listed here are mainly fruits with high pectin and those with adsorptive action. For plants with high tannin levels, see ASTRINGENT.
Adsorbents:
Charcoal (Coconut) – 12
Tutong – 5
Pectin Sources
Anonas family – 17
Antipolo family – 54
Bayabas – 66

Citrus family – 62
Kaimito – 64

ANTIEMETIC: prevents or controls vomiting.
Luya – 14
Mutha – 2

ANTIFUNGAL: kills or prevents the growth of fungi, which are the major causes of tropical skin disease, e.g. ap-ap *(tinea flava)* and buni (ringworm). Alipunga (athlete's foot) is also a fungal disease.
Abutra – 53
Adelfa – 19
Akapulko – 43
Balaniog – 65
Balatong-aso – 47
Bawang – 8
Gulasiman – 59
Gumamela – 51
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Kamatis – 66
Kampanyero – 19
Laneteng-bugat – 19
Lubigan – 1
Luya – 14
Makabuhay – 53
Moras – 54
Mutha – 2
Paminta – 58
Pistula – 48
Rabanos – 33
Rosal – 62
Santol – 52

ANTI-INFLAMMATORY: reduces irritation due to infections, as in the case of wounds. Certain types of arthritis and rheumatism are inflammations but may not be caused by infections. Anti-inflammatory drugs are also ANALGESIC because they reduce pain caused by the inflammation in a particular area of the body.
Syn. Anti-phlogistic
Also see COUNTER-IRRITANT, DEMULCENT
Citrus – 63
Dila-dila – 29
Kondol – 35
Lubi-lubi – 67
Malunggay – 55
Mansanilya – 27
Melon – 35
Mutha – 2
Papaya – 24
Rosal – 62
Sinta – 16
Tagulinaw – 30
Takip-kohol – 70

ANTI-MALARIAL: kills or prevents the growth of the protozoa causing malaria. The following plants have been cited in pharmacopoeia although there are other traditional remedies which still need to be tested further.
Balaniog – 65
Cinchona – 60
Dita – 20
Pugo-pugo – 3

ANTI-PROTOZOAL: kills or prevents the growth of protozoa. Some diseases caused by protozoa are vaginal trichomoniasis, amoebic dysentery and malaria. ANTI-MALARIAL plants are listed separately.
Abutra – 53
Apdongkahoy – 64
Balaniog – 65
Bawang – 15
Kamantigi – 22
Makabuhay – 53

ANTIPYRETIC: reduces fever by acting on a certain area in the body. Most ANALGESICS are also antipyretic. ANTI-BACTERIAL and ANTIPROTOZOAL drugs may treat the causes of fever. In traditional medical systems, DIURETICS may be used to treat fever as one way of expelling excessive "heat" in the body.
Syn. Anti-periodic, febrifuge
Also see DIAPHORETIC
Abutra – 53
Balatong-aso – 47
Batino – 20
Dapdap – 44
Dita – 20
Ikmo – 58
Kalumbibit – 73
Lagundi – 72
Lantana – 72
Lubigan – 1

Makabuhay – 53
Manunggal – 66
Rosal – 62
Sambong – 28
Tagulinaw – 30
Takip-kohol – 70

ANTISCABIOUS: kills or prevents the growth of tiny insects (mites) which cause scabies. Some plants with INSECTICIDE properties may also work against scabies.
Ampalaya – 34
Bawang – 8
Bayabas – 56
Dita – 20
Kakawati – 47
Kalatsutsi – 19
Mana – 35
Paraiso – 52
Tubang-bakod – 35

ANTISCHISTOSOMA: kills or prevents the growth of *Schistosoma,* which is actually a kind of helminth. *No* plant drug has yet been found completely effective against Schistosoma. The ones listed here have varying degrees of effectivity:
Anis – 71
Balaniog – 65
Kalabasa – 34

ANTISEPTIC: prevents infection or decay by preventing the growth of microorganisms like bacteria. Usually refers to drugs to be used externally, e.g. for wounds.
Also see ANTIBACTERIAL, VULNERARY
Abutra – 53
Balanoy – 39
Bawang – 8
Ikmo – 58
Kanela – 41
Makabuhay – 53
Pandang mabango – 13
Tintatintahan – 30

ANTITUSSIVE: reduces coughing by acting on a certain area in the brain. Other traditional remedies for coughing are usually EXPECTORANT, with a different type of action.
Dita – 20
Lagundi – 72
Sambong – 28
Talumpunay – 68

ASTRINGENT: causes contraction (tightening) of tissue and reduces discharges (e.g. blood) from wounds. Astringent plants are used for wounds as well as for diarrhea. They are also often used as a mouthwash or gargle for gum disorders. Other astringent plants are used traditionally for gastric ulcers. Plants containing tannin are all astringent. But they should not be used for long periods of time because tannin can harm the liver.
Abukado – 42*
Alibangbang – 47*
Balete – 54
Banaba – 50*
Bayabas – 55*
Creeping Fig – 54
Duhat – 56*
Granada – 59
Gulasiman – 59
Ikmo – 58
Kaimito – 64
Kalantas) 52*
Kamuning – 74*
Kasoy – 17
Kupang – 73*
Lansones – 52
Mangga – 17*
Mansanitas – 73
Narra – 73*
Payapa – 54
Piyagaw – 52
Rubber Tree – 54
Saging – 9*
Sampalok – 45*
Sibukaw – 45*
Tagulaway – 73*
Talisay – 25

*Used as anti-diarrheal.

BRONCHODILATOR: widens the bronchioles (tubes which carry air in the lungs). Used for respiratory ailments like asthma, where there is difficult breathing. Many EXPECTORANTS are also bronchodilators.
Balik-balik – 47
Gatas-gatas – 37
Lagundi – 72

Sambong – 28
Talumpunay – 68
Tigaw – 72
Walis-haba – 50
Walis-walisang – 50

CARDIOTONIC: strengthens or regulates the heart. The active drugs are glycosides which are too powerful to use in its crude form. These plants are often used as arrow poisons.
Abuhab baging – 18
Adelfa – 18
Ipo – 54
Kampanyero – 17
Pasau-na-bilog – 69
Papaya – 24
Saluyot – 69
Sarsara – 18

CARMINATIVE: expels gas from the intestines. Plants with volatile oil generally have carminative action.
Anis – 71
Balanoy – 39
Citrus – 62
Damong-maria – 29
Ikmo – 58
Mansanilya – 27
Oregano – 40
Suob-kabayo – 41
Yerba buena – 41

CATHARTIC – stimulates bowel movement, with much stronger action than LAXATIVES and PURGATIVES. There is no real medical need for cathartics.
Kampanilya – 19
Kampanyero – 19

CHOLAGOGUE: increases bile secretions, an action which helps in digestion (especially of fats). Used for stomachache and/or diarrhea caused by indigestion. Also used for hepatic disorders.
Dilaw – 15
Rosal – 62
Sabila – 7
Santan – 61

COUNTER-IRRITANT: relieves pain by the application of heat or mild irritation to the skin. Counterirritants dilate (widen) blood vessels and increase the flow of blood in the affected area. The action may be of some help for relieving pain in certain cases of arthritis and rheumatism as well as muscle pains and sprains.
Syn. Rubefacient
Abukado – 42
Batino – 20
Bitaog – 38
Dilaw – 15
Gogo – 44
Ikmo – 58
Kabling – 39
Kakawati – 47
Kalatsutsi – 19
Lantana – 72
Linga – 57
Luya – 14
Luya-luyahan – 15
Malunggay – 55
Manunggal – 66
Mustasa – 33
Paminta – 58
Sahing – 24
Sili – 66
Tanglad – 6
Tubang-bakod – 35

DEMULCENT: soothing or relieving inflammation on the skin or mucous membranes by providing a protective coating. Most demulcents are gums, mucilage or starch. Some are used externally for skin inflammations while others are used internally for conditions like bronchitis, gastritis, nephritis.
Also see EMOLLIENT.
"Gawgaw" – 78
Gumamela – 51
Kanin – 5
Okra – 50
Sampaguita – 56
Saging – 9

DIAPHORETIC: causes perspiration, an action that helps to lower body temperature. Plants with volatile oils and acids (sour tasting) are usually diaphoretic.
Syn. Refrigerant
Citrus – 62
Luya – 14

Paminta – 58
Sampalok – 45
Tanglad – 6

DIURETIC: increases amount of urine, an action that may help in treating kidney and urinary tract in infections, urinary calculi (stones), high blood pressure or hypertension and diabetes. Diuretics are also used for edema or the accumulation of fluids in the tissues (manas), a condition found in diseases such as schistosomiasis. In traditional medical systems, diuretics are used for many ailments, on the theory that the increased urination will help the body to get rid of the causes of the disease.
Banaba – 49
Buntot-pusa – 41
Citrus – 62
Dila-dila – 29
Gulasiman – 59
Kakao – 69
Kamote – 32
Kondol – 35
Kangkong – 32
Kape – 61
Kintsay – 70
Kogon – 4
Labanos – 33
Lubi-lubi – 64
Mais – 5
Moras – 54
Mutha – 2
Niyog – 12
Pakwan – 35
Tagulinaw – 30
Takip-kohol – 70
Tsitsirika – 20
Upo – 35

EMETIC: causes vomiting. The only medicinal value of emetics is for food poisoning. However, emetics are used in traditional medicine for a variety of ailments, again on the theory that vomiting would help the body to get rid of disease-causing food or other irritating substances. Many plant emetics are also often mistaken as cough remedies (See page 34). Emetics are often also PURGATIVE. Many are poisonous.
Gogo – 73
Kalumbibit – 73
Kintsay – 71
Makahiya – 48
Melon – 35
Sinkamas – 48
Tayuman – 48

EMMENAGOGUE: promotes menstrual flow. The action is usually one of stimulating contractions of the uterus. Because of this action, many emmenagogues are also potential anti-fertility drugs.
Also see SPASMOLYTIC
Abutra – 53
Damong maria – 27
Kakao – 69
Makabuhay – 53
Sambong – 28

EMOLLIENT: soothes and softens inflamed skin and mucous membranes. Usually refers to oils which form a protective layer on the skin to prevent it from drying. Emollients are also used as a base for other drugs, especially for those to be used for skin disease. (See page 78.)
Abukado – 30
Kakao – 69
Lana – 12

EXPECTORANT: promotes secretions (mucus) from the respiratory tract, an action useful in treating cough. Most expectorants are plants containing volatile oil.
Alagaw – 71
Balanoy – 39
Bawang – 8
Citrus – 62
Damong-maria – 27
Kondol – 35
Lagundi – 71
Luya – 14
Mangga – 17
Melon – 35
Oregano – 40
Sambong – 28
Sampalok – 45
Sulasi – 40
Suob-kabayo – 41
Yerba buena – 41

FIBRINOLYTIC: dissolves blood clots, thus preventing stroke (which is the entry of a blood clot into the brain's circulatory system)
Bawang – 8

HEMATINIC: corrects anemia by stimulating the formation of red blood cells or hemoglobin. Fruits and vegetables with high iron content are hematinic.
Abukado – 42
Kamote (talbos or tops) – 32
Kangkong – 32
Malunggay – 55
Saging (tuyong bulaklak) – 9
Sili (talbos) – 66

HEMOSTATIC: controls bleeding or promotes blood clotting. Usually used for controlling bleeding from wounds but a few are also used for nose-bleeding (epistaxis); bloody sputum (hemoptysis) and bloody urine (hematuria).
Syn. Styptic
Also see ASTRINGENT
Atsuete – 22
Gatas-gatas – 38
Gulasiman – 59
Kogon – 4
Malunggay – 55
Rosal – 62
Sibukaw – 45
Tabako – 69
Tinta-tintahan – 30

HYPOGLYCEMIC: lowers blood glucose (sugar).
Syn. Anti-diabetic
Also see DIURETIC
Banaba – 49
Bawang – 8
Duhat – 56
Moras – 54

HYPOTENSIVE: lowers blood pressure.
Also see DIURETIC
Ambal – 52
Bawang – 8
Citrus – 63
Kintsay – 71
Kalimatas – 17
Kanda-sa-tahok – 19
Laneteng-gubat – 19
Lubigan – 1
Mansanilya – 27
Mutha – 2
Sibakong – 19
Tsitsirika – 20

INSECTICIDE: kills or repels insects such as mosquitoes, flies, crop pests as well as lice (kuto) and scabies mites. Some plants with volatile oil will repel insects. Other insecticidal plants work because of substances other than volatile oil. Some can be very powerful.
Anonas – 17
Atis – 17
Corales – 65
Damong-maria – 27
Kakawati – 47
Kasoy – 17
Lagundi – 71
Lansones – 52
Lubigan – 1
Makabuhay – 54
Mana – 35
Santol – 52
Sulasi – 40
Tabako – 69
Tangan-tangan – 36
Tanglad – 6
Tubang-bakod – 35
Tubli – 48

LACTAGOGUE: increases milk secretions
Syn. Galactagogue
Gatas-gatas – 37
Malunggay – 55

LAXATIVE: promotes bowel movements, with milder action than CATHARTICS and PURGATIVES.
Syn. Aperient
Darak – 5
Kalumpang – 69
Kamatis – 66
Linga – 57
Papaya – 24
Pili – 24
Pistula – 48
Sampalok – 45

MATURATIVE: promotes ripening of boils.
Dita – 20

Gumamela – 51
Kamantigi – 22
Sahing – 24

OPHTHALMIC: a preparation for the eyes.
Syn. Collyrium
Sampaguita – 57

OTIC: a preparation for the ears.
Amapola – 51
Bulak-manok – 30
Soro-soro – 35
Suerda – 35

PURGATIVE: promotes bowel movement, with stronger action than laxatives but milder action than cathartics. The distinctions are not always clear – too much of a purgative naturally results in cathartic action. Purgatives and cathartics are often mistaken for ANTHELMINTICS because the increased bowel movement results in the expulsion of some intestinal worms.
Also see EMETIC.
Ampalaya – 34
Balatong-aso – 47
Kalatsutsi – 19
Kamaisa – 35
Lumbang – 35
Sabila – 7
Tangan-tangan – 35
Tubang-bakod – 35

SEDATIVE: calms the nerves and induces sleep. NARCOTIC drugs are all sedative. These drugs also reduce pain. In small amounts, they are useful but an overdose an cause coma, convulsions or even death. Plant sedatives are risky to use because it is difficult to establish how much of the active ingredient a person is taking from the crude preparation (e.g. decoction).
Syn. Soporific
Abutra – 53
Lubi-lubi – 67
Makabuhay – 53
Makahiya – 48
Talumpunay – 67

SPASMOLYTIC: reduces or inhibits (prevents) movement or contractions of smooth muscles. Most frequently used for stomach ache and diarrhea since it reduces movements of the intestine (which has smooth muscles). Spasmolytics may also be *ecbolics* (drugs which reduce pain in menstruation). The uterus is composed of smooth muscles and its contractions can be reduced.
Abutra – 53
Bayabas – 55
Damong-maria – 27
Dita – 20
Kakao – 69
Kalimatas– 17
Kanela – 41
Laneteng-gubat – 19
Lantana – 72
Lubigan – 1
Lubi-lubi – 67
Makabuhay – 53
Mutha – 2
Sambong – 28
Talumpunay – 68

TAENIFUGE: expels tapeworms.
Bunga – 11
Granada – 59
Kalabasa – 34

TRANQUILLIZER: calms the nerves, usually without causing sleep.
Kanda-sa-tal.ok – 19
Lubigan – 1
Sibakong – 15
Tsitsirika – 15
Utaw – 46

VESICANT: causes blisters. Used as COUNTER-IRRITANTS but the damage it does to the tissue outweighs the benefits.
Kasoy – 17
Mustasa – 33
Soro-soro – 35
Suerda – 35

VULNERARY: speeds wound healing. This covers a wide range of plants including those with ANTIBACTERIAL, ANTI-INFLAMMATORY and ASTRINGENT properties. Vulneraries that actually help in promoting tissue regrowth are called *proliferants.*
Abutra – 53

Ampalaya – 34
Atsuete – 22*
Bayabas – 55
Bulak-manok – 30
Comfrey – 23
Dilaw – 15
Hagonoy – 31
Kalpueng – 16
Katakataka – 32
Lantana – 72
Luya-luyahan – 15
Pandakaki – 19
Papaya – 24
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*Used in burns

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